USER MANUAL

Perfactory® Desktop

Digital Light Manufacturing System

USER MANUAL

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Perfactory® Desktop

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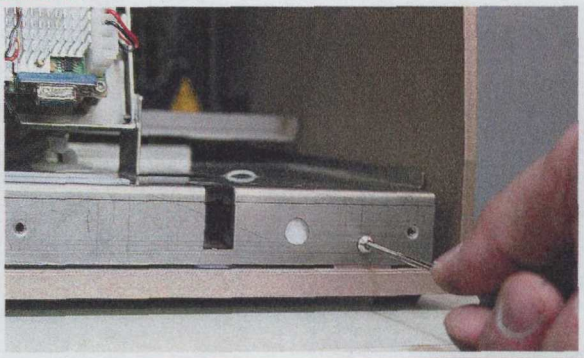
Important Instruction!

Installing the Lens

Caution! People could be injured!

Before opening the casing you must always power-off the machine. In any case pull off the power plug at the rear of the machine!



To install the lens proceed as follows:

1. Screw off the four cross-head screws at the front cover of the Perfactory Desktop machine and remove the front cover by lifting it at the lower border and pulling it down.
2. Unscrew the two allen screws (2.5mm) at the left and at the right of the assembling carridge (picture).
3. Pull the assembling carridge out of the casing to the limit. From above you can see the seating of the lens (black ring).
4. Please accomplish this step with utmost care. Let the lens carefully slide into the seating as far as it will go (picture). **Take care not to tilt the lens while inserting it.** Carefully shiver it a little bit to the right and to the left. Do not use any force.
   The end position of the lens is shown on the picture to the right.
5. Push the assembling carridge back into the machine and reinstall the two allen screws.
6. Install the machine cover and screw in the four cross-head screws.
7. Plug in the power plug at the rear of the machine.

Removing the Transportation Lock

In the Perfactory Desktop system, the orange-colored protective cover has a counterweight at the rear of the machine. It is adjusted on a rail using an allen screw (picture). The cover is completely closed upon delivery.
Unscrew the adjusting allen screw (2.5 mm) until the counterweight can be moved up and down slightly on the rail. The cover can now be opened and closed with little effort.

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Perfactory® Rapid Prototyping System

Hardware and Software Manual

Aureus

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Introduction

Aureus system is a powerful rapid prototyping / rapid manufacturing system that sets standards in terms of speed and ease of use. Thanks to the fact that it is easy to maintain and, perhaps even more importantly, affordable to operate, the system is ideal for small businesses and professional end users. As a result, it can be used in a wide range of areas, such as in the production of jewelry or hearing aids, and in dentistry.

The Aureus system is a complex high-tech system made up of mechanical, electronic and software components. It meets all the necessary national and international requirements and safety regulations.

This documentation forms an elementary part of the system, and must be paid close attention both when starting up the machine and during operation. It is therefore a good idea to keep the hardware documentation in close proximity of the machine, so that the operator can access it at all times. The documentation is aimed at individuals who already have knowledge of the area of rapid prototyping / rapid manufacturing, and who have also been given qualified instruction in operating the machine.

Please read through the entire documentation, and only operate the machine if you have understood all activities and instructions. It is important that you adhere exactly to the instructions provided and perform the steps in the order specified. Please also pay attention to all safety instructions.

Warranty

Should any material defect or errors occur, despite correct usage, envisionTEC offers a one year limited warranty period starting from when the goods are received for the Aureus system and the accessories supplied. The obligation of envisionTEC is limited to repairing or replacing defective machine parts.

No warranty can be provided for faults that are due to subjecting the goods to improper use or above-average strain, nor can any warranty be provided for wearing parts. Under no circumstances will envisionTEC assume liability for the consequences or side-effects of a violation of the warranty conditions, even if this has been agreed to or expected, and even in the case of a fault or negligence on the part of the company.

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Hardware Manual

This chapter of the documentation explains the first steps involved in using Aureus, and provides instructions with regard to startup, important basic settings and the first construction process.

A word in square brackets means to press the button on the machine (e.g. [enter] and [esc] for 'enter' and 'esc' button.

Fig. 1: *The panel of the Perfactory machine.*

Delivery

The Aureus system has been packed carefully prior to shipping, in order to practically rule out the possibility of damage to the machine if transported properly. If you notice any external damage to the package upon delivery, indicate this damage to the transportation company immediately and ask them to sign a damage report.

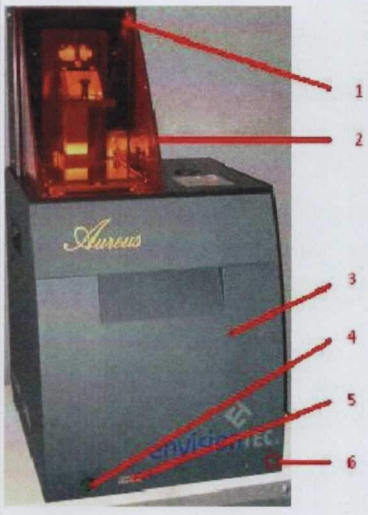

Fig. 2:
Front view of the Perfactory Desktop
1: Protective cover
2: Handle for opening
3: Machine front cover
4: ON switch
5: USB port
6: Mounting screws

1.0.1 Unpacking the Machine

To unpack the machine, please perform the following steps in the order specified:

1. Place the packaged machine on an even surface and begin by cutting the black bands.
2. Carefully cut the plastic cords and lift the outer box from the machine.
3. Remove the plastic spacer rings and the outer pakkaging film.
4. The orange-colored protective cover and the display panel are additionally protected by a transparent sheet, which you can simply peel off.
5. Examine the machine for any damage caused during transportation, and report anydamage to the responsible forwarding agent .

1.0.2 Positioning

In order to obtain the best possible results, you should select a position for the machine with care. The following should be observed here:

- Position the Aureus machine on a flat and even surface and lock the rollers to prevent the machine from moving.
- Do not expose the Aureus machine to any direct UV radiation (e.g. sunlight).
- Ensure that the room temperature does not fall below 23°C or exeed 28°C. Follow any temperature instructions for the used materials. Generally, the ideal working temperature is around 23°C.
- Ensure that the environment of the Aureus machine is clean and dry without dust and smoke. That is very important for getting usable build results.

1.0.3 Checking the Accessories

Various accessories are supplied for the purpose of starting up your Perfactory system and carrying out the various activities. If the accessories supplied are not complete, please contact your distributor.

- Network cable, 5mm
- Crossover network cable, 5m, colored plug
- Feeler gauge, 0.15mm
- Hexagon key, 2.5mm
- Spatula, 50mm
- Card scraper
- Calibrating plate, 2mm
- Focusing magnifier, 10x zoom
- Focusing foil, DIN A4
- Documentation

1.1 Startup

Start up the machine with care, precisely following these instructions. Please remember that the quality of production results greatly relies on correct startup.

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1.1.1 Installing the Lens

Caution! People could be injured!
Before opening the casing you must always power-off the machine. In any case pull off the power plug at the rear of the machine!

To install the objective proceed as follows:

1. Loosen the four cross-head screws at the front cover of the Aureus machine and remove the front cover by lifting it at the lower border and pulling it down (Fig.3, 4, 5)

Fig. 3: *This picture shows the 4 screws that are fixing the front cover.*

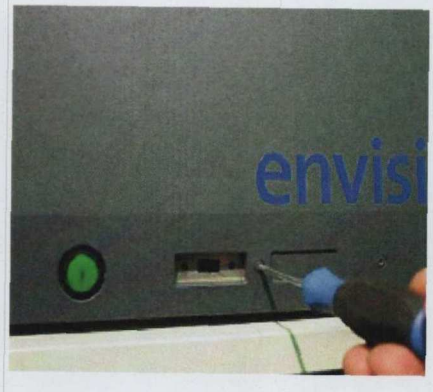

Fig. 4: *Loosening the screws with cross-head screws driver.*

Fig. 5: *Removing the front cover..*

2. Unscrew the two Allen screws (2.5 mm) at the left and the right of the assembling carriage (Fig. 6). Move the curtain so that it would not surround the lens seat anymore (Fig. 7).

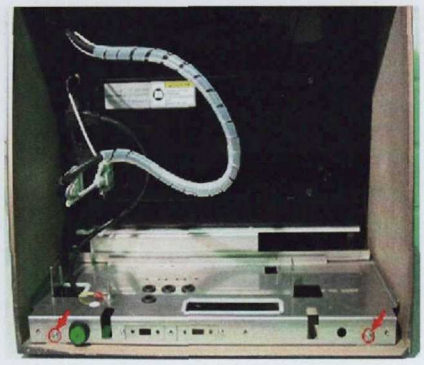

Fig. 6: *This picture shows the pos. of the screws on the Projektor carriage.*

Fig. 7: *This pictue shows hor to curtain should be removed.*

3. Pulle the assembling carriage carefully out of the casing to the limit (Fig. 8). Frome above you can see the seat of the lens (black ring) (Fig. 9).

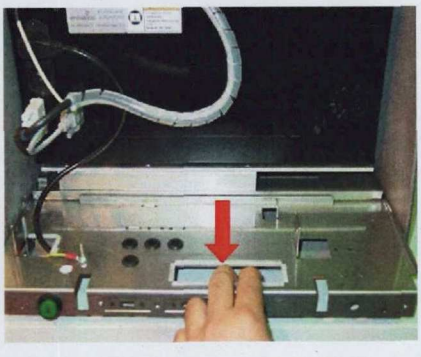

Fig. 8: *This picture shows how to pull out the carriage.*

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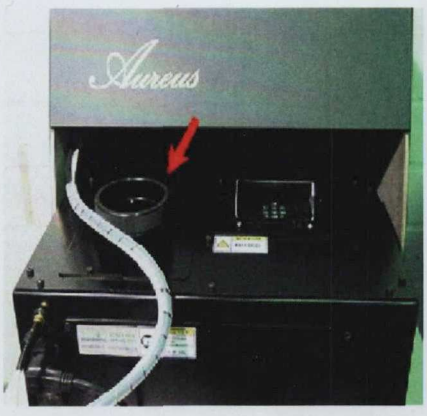

Fig. 9: *This picture shows the seat of the lens*

4. Please accomplish this step with utmost care. Let the lens carefully slide into the seating as far as it will go (Fig. 10). **Take care not to tilt the lens while inserting it.** Carefully shiver it a little bit to the right and to the left. Do not use any force. The end position of the lens is shown on Fig. 11.

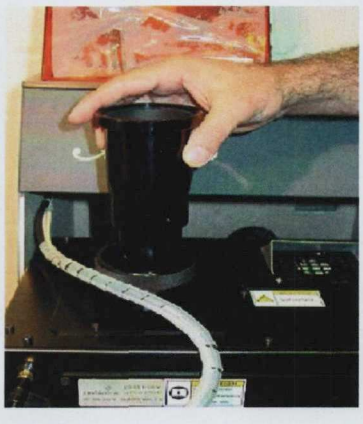

Fig. 10: *This picture shows how the lens should be installed.*

Fig. 11: *This picture shows the end position of the lens after installation*

5. Push the assembling carriage back into the machine and reinstall the two allen screws.
6. Install the machine cover and screw into the four cross-head screws.
7. Plug in the power plug at the rear of the machine

1.1.2 Connections

The Perfactory system is largely assembled prior to delivery. There are therefore only a few actions to be performed in order to connect the machine.

Caution! The machine could be damaged!
Never operate the machine with a voltage other than that specified on the Perfactory rating plate. In accordance with the country of delivery, the machine is prepared in the factory for the required voltage.

- Plug in the mains cable at the back of the machine, and connect it to the power supply (Fig.12) .
- Plug in the Ethernet cable at the back of the machine, and connect it to your computer network. If you want to connect the machine directly to a computer (e.g. a Notebook PC), use the crossover network cable included in the scope of delivery. This is the cable with the colored connector plugs.

Fig. 12:
Rear view of the Aureus machine; Power supply socket and Ethernet socket.

1.1.3 Control Elements

Before switching the machine on for the first time, you should familiarize yourself with the available control elements.

To the right of the orange-colored protective cover you can see the display panel, and below that the control buttons (Fig. 13). The buttons perform the following functions:

- **menu**
  This button has two functions. During the machine startup phase, you can use the [menu] button to change the dialog language and thus quickly obtain the language you require. During the machine operation phase, you use this button to open and close the 'Settings' menu.
- **esc**
  The [esc]' button can be used to cancel most actions and settings within a menu.
- **[arrow buttons]**
  You can use the arrow buttons to navigate up and down through the menus, define settings and select predefined values.
- **enter**
  This button confirms your selection in the current menu.
- **play/pause**
  The red play/pause button changes its function each time you press it. 'Play' starts the construction process currently loaded. 'Pause' stops the process, and pressing the button again resumes the process.

The top left-hand corner of the display panel always shows the name of the current submenu (e.g. 'Calibration'). The top right-hand corner displays the menu mode set.

Fig. 13:
This picture shows the Perfactory Desktop machine display panel with the associated control buttons.

1.1.4 Software Settings

Once you have completed all the necessary preparations, the machine can be started up.

Caution! People could be injured!
Never look into the lens or the projector lamp, as the powerful light may damage your eyesight.

To switch on the Aureus system, hold down the white ON switch for a few seconds. The system starts up and the display panel (Fig. 13) shows the progress of this operation. If the message 'Attention! Licence Code invalid! Please check.' appears on the display, select 'Settings [enter] > Licence Code [enter]' from the menu and enter the licence code supplied with the machine. Use the arrow buttons to set the required value for each position. In each case, press [enter] to proceed to the next position, and press 'esc' at the end to exit the menu.

When the Aureus system is switched on for the first time, a few basic settings need to be set (this only has to be performed once):

General Settings

You set the time, date and dialog language as follows:

1. First define the menu language by pressing the [menu] button, then selecting 'Settings [enter] > Language [enter]' .

2. Use the arrow buttons to select the required dialog language and confirm by pressing [enter].

3. Now select 'Time Setting [enter]' . The hour display will start flashing.

4. Use the arrow buttons to set the hour. Confirm your entry by pressing [enter] and proceed in the same way for the minute display.

5. After that, select 'Date Setting [enter]' from the menu and set the day, month and year of the current date. Confirm again by pressing [enter] and exit the menu by pressing the [menu] button.

Network Settings

In order to be able to access your Aureus system from the network, you must enter the relevant network data. If you do not have this data, ask your system administrator.

1. To enter the network data, press the [menu] button and use the arrow buttons to select 'Settings [enter] > Network Settings [enter]' .

2. Press [enter] again to confirm the prompt. The system will now ask for the computer name (max. 16 characters), IP address, subnet mask and an IP address for the gateway (optional).

3. Enter the data consecutively using the arrow buttons. Confirm your settings by pressing [enter] and press the [menu] button to exit the dialog.

1.1.5 Switching off the Machine

Aureus should only be switched off using the menu.

1. To do this, press the [menu] button.

2. Select 'Shut Down System [enter]' from the menu.

3. Press [enter] again to confirm the prompt. The machine will now be shut down correctly and the projector lamp will be switched off.

Caution! The machine could be damaged!
Never switch off the machine by disconnecting the mains cable, unless it is actually an emergency. Doing so could result in data loss or damage the hardware.

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1.2 Building Preparations

Perform the following steps in order to ensure that all the necessary parameters for the construction process have been set correctly. Carry out the steps carefully and as precisely as possible, in order to obtain satisfactory construction results.

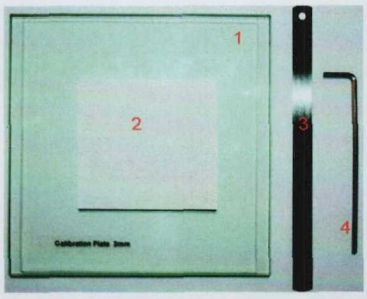

Fig. 14: *The tools you need to accomplist the destance calibration..*

1.2.1 Offset Calibration

As the Aureus system is calibrated at the factory and packed carefully prior to dispatch, calibration is not usually necessary. In the event that it does actually become necessary (as a result of transportation, mechanical stress, etc.), you should perform the following four steps one after the other: inserting the calibration plate, aligning the calibration plate, defining the origin and seting the offset.

In order to perform these steps, you will need the following aids from the accessories supplied:

- Calibration plate
- White sheet of paper
- Feeler gauge, 0.15mm
- Allen key, 2.5mm

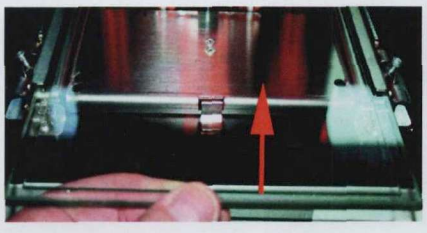

Fig. 15: *The picture shows how to insert the calibration plate into the slot.*

Inserting the Calibration Plate

Make sure that the calibration plate is clean before inserting it. You set the calibration plate as follows:

:Caution! People could be injured!
Never put your fingers into the tilting mechanism at the back side of the calibration plate. Your may get your fingers squashed.

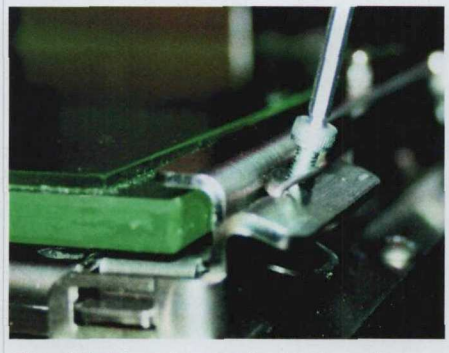

Fig. 16: *The picture shows the adjusting screw at the right front edge of the inserted calibration plate. Turning to the right screws the allen screw off.*

1. Press down the metal tongue edge and push the calibration plate horizontally, applying light pressure, into the slot as far as it will go.

.What we call calibration plate consists of a carrier glass plate and a smaller calibration glass plate attached to this. The calibration plate is in the right position when the writing on the plate is in the left front cornerand can be read correctly.

Aligning the Calibration Plate

The next step is to align the construction platform and calibration plate (this corresponds to the surface of the basement floor) so that they are coplanar:

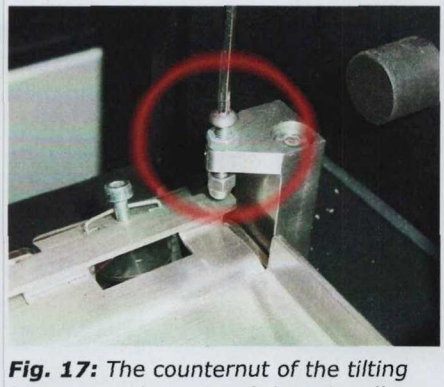

Fig. 17: *The counternut of the tilting limiter is to loosen and then the allan screw is to screw out as far as possible.*

2. Carefully screw in (clockwise) the four adjusting screws as far as possible using the 2.5 mm allen key as shown in figure 16. Only use light force while screwing in order to avoid breaking the calibration plate.

3. Now screw out the two arcorn nut screws of the tiltinglimiter at the rearmost side of the base plate above the rail guides (Fig.17).
For that, first loosen the counternut using a 5.5 mm jaw wrench. Afterwards unscrew the allan screws with 2 mm allan wrench as far as possible without using fore. The distances must be adjusted at the end of this procedure.

4. In the next step screw out the right front screw (Fig. 16) so that the right front indicator has a gap of ca. 1 mm (red arrow in Fig. 18) when pressing down the base plate at the right front corner.

Caution! People could be injured!

Never put your hand on the calibration plate or basement while moving the build platform downwards. You may get your handor fingers squashed.

5. Now adjust the origin to '0'. Therfore press [menu] and select Calibration [enter] > Initial Build Pos. [enter] from the menu (Fig. 19)

6. Use the [Up/Down] keys to set the value to '0' and confirm with [enter]. Press [esc] two times to leave the menu.

7. After that turn out (anticlockwise) the three allen screws (except of the right front screw) of the calibration plate until they get light contact to the base plate.

8. Place one sheet of paper (90g/m³) on the calibration plate in order to prevent the plate from being scatched by the feeler gauge, and place the feeler gauge on the paper (Fig. 20)

9. Use the [down] arrow button to move the construction plattform down until the feeler gauge makes contact between the paper and the calibration plate. Move the last few millimeters carefully in order to not lose motor steps, because that may influence the displayed value.

Althought it is hardly possible for the construction plattform and calibration to be damaged by moving the platform down too far, you should nevertheless perform this step with utmost care.

10. Now move the feller gauge between paper and

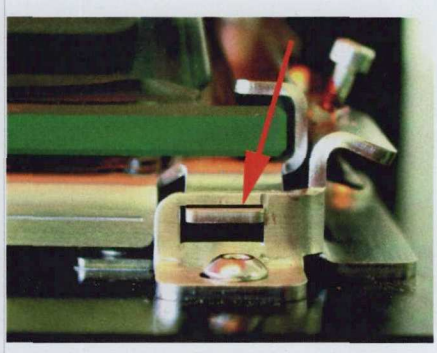

Fig. 18: *A small gap should be left above one of the front indicators. Check with the delovered feeler gauge..*

Fig. 19: *The origin is set to '0.00mm'.*

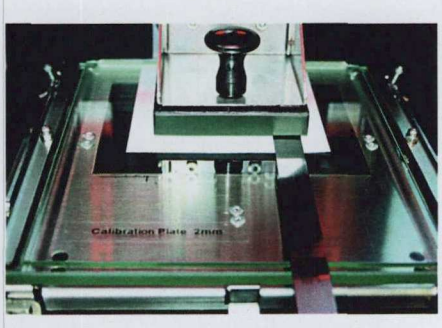

Fig. 20: *The picture shows the paper sheet and the feeler gauge between the installed calibration plate and the build platform.*

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calbration platform from all sides (front, rear, left, right). The destination is to have the same notceable resistance an all sides while moving the feeler gauge.

11. Where the the feeler gauge has less space, carefully screw in the corresponding adjusting screw a little by turning it clockwise using the allen key, in order to increase the distance (max. 1/4 turn). Start with the screw at the corner of the building platform where the force to move the feeler gauge in tallest.

12. If there is to much space for the feeler gauge at all sides, carefully move down the build platform a little by shortly pressing the [down] arrow key once or twice. If there is not enough space screw in the four screws a little or, to prevent that the gap gets to big, move up the build platform a little by pressing the [Up] arrow ones or twice.

13. Continue adjusting the three screws until you can insert the feeler gauge with the same force on all sides.

14. Check repeately, if there are gaps at the front indicators of ca. 1 mm (Fig. 18).

15. If everything is ok, cunstruction platform and calibration plate will be aligned coplanar to one another.

16. Now adjust the tilting limiter located at the rearmost side of the base plate. The distance between the rail guides and the acorn nut screws be 2 mm on both sides.
    To do so press the calibration plate down at the rear side (Fig. 21) and screw in the allan wrench until the 2 mm distance is adjusted (Fig. 22). Now fix the screws by the counternut (5.5 mm jaw wrench).

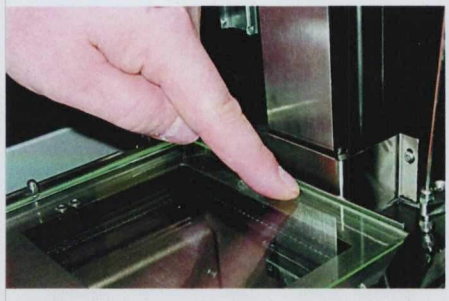

Fig. 21: *A gap of approxi,ately 2 mm is necessary for optimal working of the tilting mechanism.*

If there is a gap of more than 3 mm it may happen that the seperation process is not successful (sticking, lines or broken parts).

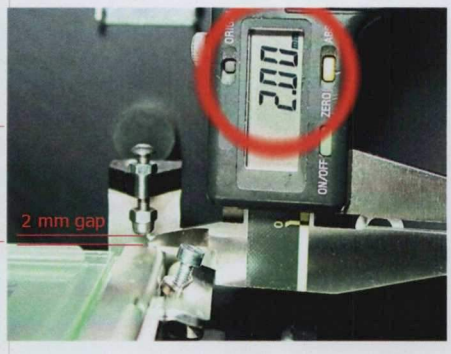

Fig. 22: *The gap between the rail guide and the acorn nut screw must be 2 mm.*

Defining the Origin

17. . The third step is to define the exact origin of the build platform. To this end, the surface of the calibration plate (and therfore the surface of the base ment floor) is defined as the zero level for the build platform: Remove the feeler gauge and sheet of paper from the calibration plate.

18. Now look at the display and subtract 0.30 mm from the shown value. Move the paltform down until the display shows the calculated value (see "Example for

Example: *If the display shows a value of 0.130mm, you will get a value of -0.170 mm after subtraction of 0.30 mm. So you have to move the platform down until the display shows -0.170 mm*

Calculation" on the right)..

You may not be able to set the value to a precision of a thousandth of a millimeter, as the servomotor does not permit such a precise setting.

19. Make a note of this position value as you will need it in the next step.

20. Now press the [menu] button and select 'Calibration [enter] > Initial Build Pos. [enter]' again.

21. Set the calculated value previously written down as your new offset by using the arrow buttons and press [enter] to confirm your input. Press [esc] to leave the menu.

22. To control your settings come out of the menu screen and press the [Up] arrow button as short as possible. The display must show an 'Act. Pos.:' of 0.005mm or 0.010mm. Then you have aligned the calibration platform correctly. If you see a significantly different value you have to repeat the distance calibration.

23. Press [menu] and select 'Handling [enter] > Move to Home Position [enter]'. Confirm with [enter] to get the build platform up to it's home position.

The origin is now defined.

Background Information
The 0.30mm value is derived from the thickness of the paper (0.1mm) plus the thickness of the feeler gauge (0.15mm) plus the contact pressure important for the construction process (0.05mm).

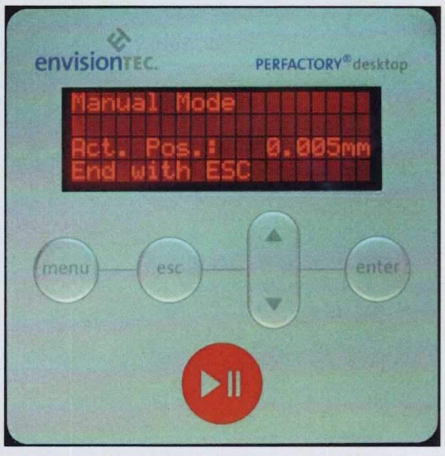

Fig. 23: *The display shows a position of 0.005mm, what means that the settings are ok.*

1.2.2 Generating the Compensation Mask

The compensation mask is to be regenerated each time you change the build material on the machine, in order to adjust to the necessary contrast. Doing this, which shouldn't take more than 10 minutes once you have a little practice, will avoid incorrect construction processes and therefore prevent you wasting time or material.

The compensation mask is generated in three steps: "Preparation", "Measuring and Adjusting the Projector Brightness", and "Checking the Compensation Mask". Perform the steps with care and in the specified order, as this is the only way to ensure that you obtain good production results.

Preparation

After being switched on, the projector should be left running for at least 30 minutes in order to ensure best conditions. Only then should you proceed with the next step.

1. Press the [menu] button, select 'Calibration [enter] > Mask Generation [enter]' and press [enter] again to confirm the prompt.

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2. Remove the basement if it is still in place.

3. Push the calibration plate horizontally, applying light pressure, into the slot as far as it will go (Fig. 24). What we call calibration plate consists of a carrier glass plate and a small calibration glass plate attached to this.The calibration plate is in the right position when the writing on the plate is in the left front corner and can be read correctly.

   If you have only switched on the machine a short time ago, the lamp will be in warm-up phase. The remaining time for this phase is displayed and counted down on the display panel. You cannot proceed with the next step until the lamp warm-up phase has been completed.

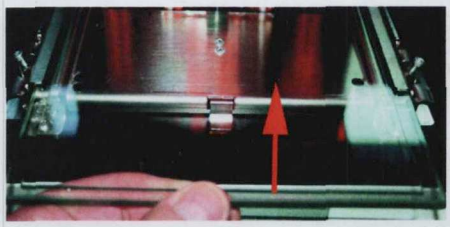

Fig. 24: *The picture shows hoe to insert the calibaration plate into the slot*

4. Define in the 'Select Accuracy' menu how precisely the current compensation mask should be measured, and confirm your selection by pressing [enter]. Where possible, you should use '48-Field Measurement' , as this yields the best results. The system will then ask you to enter the target brightness value.

5. Set the target brightness value using the arrow buttons and confirm by pressing [enter]. The target brightness value is the minimum brightness required for the current construction process, and is specified in mW/dm². You can find this value on the construction substance data sheet, for instance.

Measuring and Adjusting the Projector Brightness

The projector brightness is only measured during initial projector adjustment, after switching on the machine. The Aureus system projects 9 consecutive points onto the calibration plate, which need to be measured using the photosensor.

6. To do this, take the photosensor out of the retainer (below the display panel) and remove the protective cap (Fig. 18).

Fig. 25: *The picture shows the photosensor and the black protective cap.*

7. Center the sensor on the spot of light in such a way that the spot is fully covered and no light shines out at the edges. A good way to check this is to look at the mirror image of the spot of light (Fig. 26).

8. Press [enter] and wait at least two seconds for the brightness value to stabilize. Then press [enter] and move the photosensor to the next spot of light.

9. Measure all spots of light in this way, until the measured minimum value is displayed and you are asked to position the photosensor on this.

10. Center the photosensor on the spot of light, let it go and confirm by pressing [enter]. The display panel will output a message stating that the sensor must not be moved during measurement. Confirm again by pressing [enter].

The machine will then begin the process of automatic brightness adjustment. A short time later, the message 'Measurement Finished!' will appear, and must be confirmed by pressing [enter]. Following this, the field measurement previously selected will begin (e.g. 48-field measurement). The first spot of light will appear on the calibration plate and the display panel will be ready to receive the data for the first measuring point.

11. Position the photosensor again in the centre of the spot of light and confirm by pressing [enter]. The second spot of light will appear. Proceed in this way for all projected spots of light. Following the last measured value, the mask statistics will be displayed, including the mean value and standard deviation.

12. Press [enter] to display the minimum value together with the corresponding spot of light. Press [enter] again to display the maximum value together with the corresponding spot of light. The Perfactory will then calculate the new compensation mask and, shortly afterwards, project a control spot of light onto the calibration plate.

13. Position the photosensor in the center of the spot of light and let go of it as soon as it is correctly aligned. Confirm by pressing [enter] and press [enter] again to confirm the message that then appears. The machine will then carry out automatic brightness adjustment using the new measured values.

14. Confirm the end of measurement by pressing [enter]. The target brightness value set by you and the calculated brightness value will now be displayed. Press [enter] to calculate the new compensation mask. The machine will then begin checking the compensation mask.

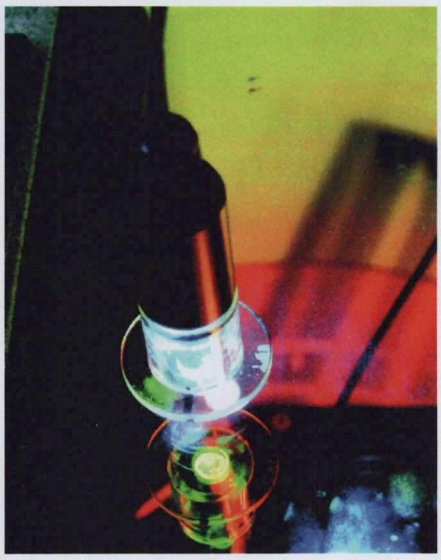

Fig. 26: *The picture shows the photosensor centered on a spot of light, as can be seen easily by looking at the mirror image.*

Checking the Compensation Mask

In this step, the machine checks the quality of the compensation mask based on 13 measuring points.

15. Carefully position the photosensor on the first measuring point projected by the machine, in such a way that the point is fully covered and no light shines out at the edges (Fig. 26).

16. Now press [enter] whereupon the machine will project the next measuring point onto the calibration plate. Position the photosensor on the second measuring point, align it and press [enter]. Proceed in this way for all 13 points.

17. Following the 13th measurement, the display panel will show the result, including the mean value and standard deviation. If the deviation is more than ±5%, a suitable error message will be output. If this

is the case, no construction process should be started, as the construction results are not at all likely to be satisfactory.

18. Press [enter] to display the minimum value, and press [enter] again for the maximum value.

The process of generating the compensation mask is now complete. If the deviation that has determined is too large, it is possible that the projector lamp is defective and needs to be replaced.

Fig. 27: *Material Tag.*

Material Tag

The Aureus Machine works with the Material Identification Module(MIM).

With every Material bottle you will receive a Tag or an Identification Card that contains the following information(Fig. 27,28):

- Material type
- Volume of the Material in the bottle
- Batch Number of the Material

Fig. 28: *Material Tag packed with the bottle.*

The Material Tag should be placed on the Tag Holder(Fig. 29, 30) at the Aureus Machine to enable the communication between the Tag and the Machine.

Fig. 29: *This Picture shows the position of the Tag holder on the Aureus Machine.*

Every Material Tag corresponds to a Material Type, it is very important to place the Material Tag that corresponds to the Material which will be used for the job process.

When sending a Job to the Machine, the Tag on the Tag Holder will be scanned and compared to the Material in the Buildstyle which was used to build the Job in Perfactory RP software.

If the Material Tag was not on its place or if it doesnot correspond to the Material of the Buildstyle, the Job will not be transferred to the Machine and an error message will be shown on the PC about a license problem.

The Material Tag has a limited volume, the volume contained in the Material Tag will be shown at the beguining of the Job and during the Build Job process. During the build job process, the volume of the consumed Material will be deducted instantly from the Material Tag.

In the event where the Volume on the Tag is not enough to run the Job a message will be shown on the Machine displayto replace the Material Tag with a full one.

Fig. 30: *This Picture shows how to place the Tag on the Tag holder at the Aureus Machine.*

1.3 Building Process

Starting a construction process is associated with various different activities and preparation steps. In order to obtain optimum results, you should proceed exactly as specified in the following instructions:

Preparation

1. Please heed the notes provided in section 1.0.2 with regard to positioning the machine.

2. If the construction platform is not in the home position (right at the top), first move the supporting arm up by selecting 'Handling [enter] > Move to Home Pos. [enter]' .

3. Release the mounting lever above the construction platform by turning it anticlockwise, and lift the construction platform out to the front using the handle.

4. Now hook in the required construction platform and tighten the lever again by turning it clockwise. It is sufficient to tighten it lightly by hand.

5. Install the calibration plate as described on page 19 ('Inserting the Calibration Plate').

6. Press the [menu] button and select 'Handling [enter] > Compensation Mask [enter] > Check Comp. Mask [enter]' . The first measuring point will be projected onto the calibration plate.

7. Carefully position the photosensor on the measuring point, in such a way that the point is fully covered and no light shines out at the edges (Fig. 26).

8. Press [enter]. The machine will then project the next point onto the calibration plate. Align the photosensor and press [enter]. Proceed in this way for all measuring points.
   Following the last measurement, the display panel will show the rsult, including the mean value and standard deviation. If the deviation is more than ±5%, a suitable error message will be output. If this is the case, no construction process should be started, as the construction results are not all likely to be satisfactory. You then carry out the process of generating the compensation mask, as described in section 1.2.2.

9. Press [enter] to display the minimum value, and press [enter] again for the maximum value. Press [esc] twice to exit the menu.

10. Remove the calibration plate and push the filled basement onto the guide rails until it clicks into place..

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Caution! People could be injured!
As handling chemicals puts you at risk of coming into contact with corrosive chemicals, being burnt, inhaling poisonous vapors, etc., you should always put on suitable protective clothing (gloves, protective goggles, breathing protection, protective overall, etc.) before working with construction substances. Take utmost care to avoid getting any chemicals in your eyes or breathing in chemical vapors. Always wash your hands thoroughly after work. Take care not to spill any chemicals.

11. Fill the basement with the required substance and carefully push it into the pick-up rails until it clicks into place. Take care not to spill any construction substance.

12. Completely close the orange-colored protective cover.

13. Place the corresponding Material Tag in the Tag Holder as described on page 25 in the section 'Material Tag´.

Starting the Construction Process

The construction process file is created, with the aid of the Perfactory Software Suite, on a Windows-based PC and sent to the Aureus system. For details of this procedure, please refer to the documentation on the Perfactory Software Suite.

1. Select 'Handling [enter] > Start New Job [enter]' from the menu.

2. Select the required file and press [enter] again to confirm. The construction process will be started following a comfirmation prompt.

Ending the Construction Process

You can pause the construction process at any time by pressing the 'play/pause' button, or terminate the process by pressing [esc]. We highly recommend that you do not interrupt the construction process for any longer than 10 minutes.

After construction has been finished you can remove the build platform (refer to page 19, 'Inserting the Calibration Plate') and carefully dissolve the model.

Before you are going to start the next Buildjob it is highly recommended, that you spring-clean the basement and the surface of the machine.

1.4 Maintrance

Certain maintrance work can be accomplished by the machine´s operator. As a assumption the operator must be instructed to the machine by a competent person.

Caution! People could be injured!

Before maintraining or repairing you must always power-off the machine. Shut down the machine by pressing the menu button, select "Shut Down System" and confirm with enter. After that pull off the power plug at the rear ofthe machine.

The last step is to carry out a mask generation. Please refer to section 1.2.2 and follow the instructions.

1.4.1 Changing the Fuse

The machine contains two fuses wich are located close to the power connector at the rear of the machine. To change a fuse the black fuse holder simply must be plugged off. Brocken fuses have to be replaced by fuses of the same specification.

1.4.2 Changing the Projector Bulb

The projector bulg is changed by a few work steps.

Caution! People could be injured!
You can sustain heavy burns at you hands as the projector bulb gets very hot during operation. Hence let the machine cool down at least 30 min.

Please proceed as follows:

1. Open the front cover of the machine by screwing out the four slit screws (Fig. 3, 4).

Fig. 31: *Position of the lamp in the projector.*

Fig. 32: *This picture shows the screws which we need to unscrew in order to remove the lamp cover.*

2. Lift the cover at the lower angle and pull it out downwards (Fig. 5).

3. Unscrew the two allen screws at the front of the mounting carriage, move the curtain from around the lens seat and carefully pull out the carriage until it stops (Fig. 6, 7 & 8)

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4. Now unscrew the slit screws at the filter & cover grid of the projector bulb (Fig. 31, 32) and pull it out by lifting it with an angle of 45° and pulling it as in Fig.33.

5. Now loosen the two screws that are fixing the lamp and pull it out as in Fig. 34 & 35.

6. Push in the new projector bulb in the same way you have removed it.

7. It is important to place the lamp in the right orientation otherwise it cannot be installed.

8. Push the mounting carriage into the machine and tighten the screws.

9. Push the upper angle of the cover into the fitting and press the lower angle to the machine.

10. Screw in the cover screws.

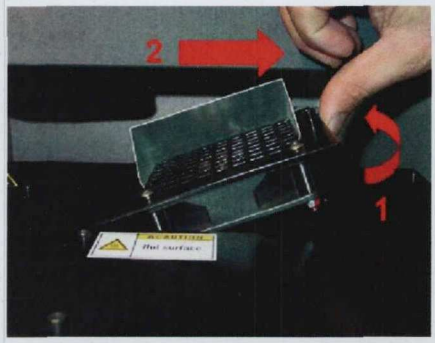

Fig. 33: *This picture shows how to remove the lamp cover.*

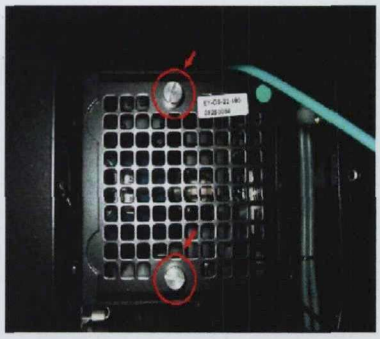

Fig. 34: *This picture shows the screws which needs to be loosened to replace the lamp.*

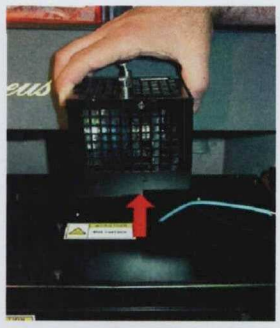

Fig. 35: *This picture shows how to litf the lamp to replace it..*

Perfactory Software Suite

Chapter 2 of this documentation leads you through the Perfactory Software Suite delivered with your Perfactory machine.

2.1 Installing the Perfactory Software Suite

This short instruction manual allows the user to quickly install Perfactory Software Suite and the Magics envisionTEC Software.

The Perfactory Software Suite and the Magics envisionTEC Software are tested for the Windows versions:

- Windows 2000 (SP4 or higher).
- Windows XP (SP2 or higher recommended).

When first starting Magics envisionTEC you will be prompted to enter a valid license key.

If you do not yet have a valid license key, you will need to contact us at support@envisiontec.de.

You need adminstration rights for installation and use of the Perfactory Software Suite.

Overview of the Installation steps

- Install Perfactory Software Suite
- Install Magics envisionTEC
- Copy Magics platform parameter files
- Setting up Perfactory Software Suite
- Setting up Magics envisionTEC
- Register Buildstyles

2.1.1 Install Perfactory Software Suite

To install the Perfactory Software Suite proceed as follows:

1. Insert the Perfactory installation CD and click at 'Install Perfactory Software' to start the installation process.
2. Read and agree the 'License agreement'

3. Enter your user name and company name. Choose whether you wish to register for your account only or for all users of the computer.

4. Select the target directory. You can use the Browse button to change the default setting.

5. Start the installation sequence.

2.1.2 Install Magics envisionTEC Software

To install the Magigs envisionTEC software proceed as follows:

1. Click on 'Install Magics envisionTEC' to start the installation process.

2. For a detailed instruction for the installation process refer to the Magics envisionTEC documentation in section 4 of this manual.

3. You need a license key to operate the program (see section 2.1.5).

2.1.3 Copy Parameter Files

1. Locate the Magics parameter file directory for your installed version. It can be found
   - on the Installation CD:
     \Additional Files\Materialise Platform Parameter
   - inside the Perfactory software Suite installation directory:
     C:\Program files\Envisiontec GmbH\Perfactory Software Suite 2.1\Materialise Parameter\.

2. Enter the folder with the correct version number and copy the parameter files (*.mcf).

3. Select all files and copy them.

4. Open the working directory of the Magics envisionTEC software:
   - C:\Program Files\Materialise\Magics 9.x. for Magics 9.x and older,
   - C:\Program Files\Common Files\Materialise\ for Magics X (10.0)

5. Paste all copied platform files (*.mcf) into
   - the 'platforms' folder for Magics 9.x and older,
   - the 'MyMachines' folder for Magics X (10.0). If this file doesn't exist, it must be created manually.

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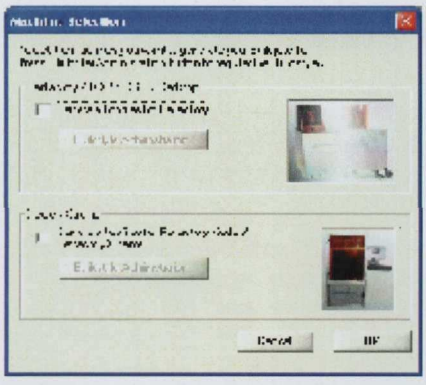
2.1.4 Setting up Perfactory RP

Open the Perfactory StartCenter and start Perfactory RP. During the initial start of Perfactory RP the software asks for some default settings:

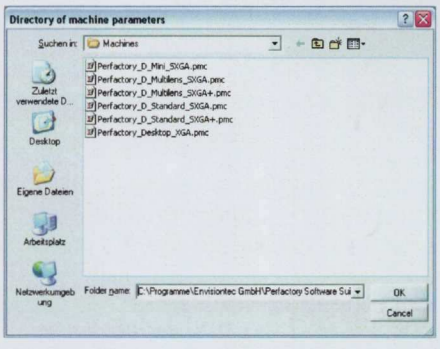
1. Rapid Prototyping machines that should be used as destination for Buildjob generation:
   There will appear a dialog that gives you an overview of the available RP machines. Select the machines you like to generate jobfiles for.

2. Path of machine parameter files:
   This path will be asked by the first of two directory selection dialogs. Select the directory that contains your machine parameter files. The default path is 'C:\Program Files\Envisiontec GmbH\Perfactory Software Suite 2.1\Perfactory RP\Machines\'.

3. Path of material parameter files:
   This path will be asked by the second of two directory selection dialogs. Select the directory that contains your material parameter files. The default path is 'C:\Program Files\Envisiontec GmbH\ Perfactory Software Suite 2.1\Perfactory RP\ Materials\'.



In most cases the default path proposed by the software is the correct one. You only need to change this path if you store your parameter files at a non-default location.



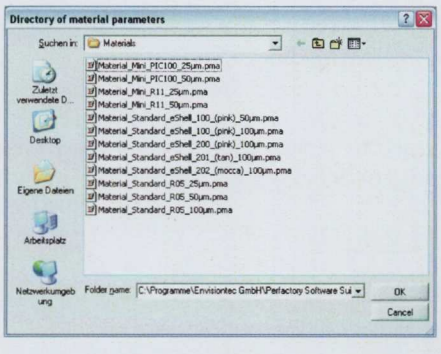
You need to define also the location of the program Magics envisionTEC:

1. From the 'Tools' menu choose 'Locate Support Program...'.

2. Switch to the installation directory of Magics envisionTEC (e.g. C:\Program Files \Materialise\Magics).

3. Select the program 'Magics.exe'.

4. Click 'Open' to confirm your selection.



2.1.5 Setting up Magics envisionTEC

When first calling Magics envisionTEC you will be prompted to enter a valid license key. If you do not yet have a valid license key, you will need to contact us at support@envisiontec.de.

Please use the 'Generate request' option provided in the dialog box to ensure correct and fast handling. As this is an OEM version Materialise will not provide support to you directly.t

To provide you with the password please sent us:
- Perfactory Machine serial number
- System ID generated by Magcis.

If you have any further questions please do not hesitate to contact us using the email address above.

In Magics envisionTEC you need to define the location of the program Perfactory RP.

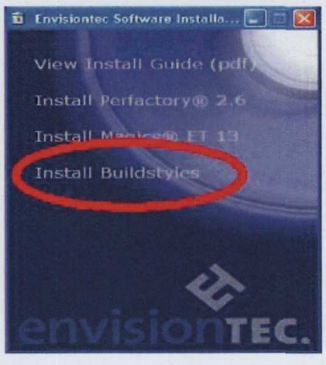
To do this proceed as follows:

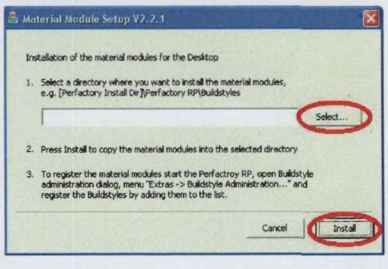
1. From the 'envisionTEC' menu choose 'Locate Envisiontec'.
2. Switch to the where you have installed 'Perfactory RP' (c:\Program Files\ Envisiontec GmbH\ Perfactory Software Suite 2.1\Perfactory RP).
3. Select the program 'Perfactory RP.exe'.
4. Click 'open' to confirm your selection.

2.1.6 Buildstyles Installation & Registration

The Aureus machine is delivered with a specific material module called also Buildstyle, adjusted to your machine as well as to the selected build material. Therefore it is necessary to install the correspondent material module(Buildstyle) for creating a Buildjob.

1. The Buildstyles which can be used to generate jobs on your Machine are delivered with the Envisiontec Machine and can be installed using the Envisiontec Software Installation CD.
2. The Buildstyles should be saved on the Harddisk of your PC. Press "Select" button to select a Directory where you want to save the Buildtyles, e.g. [Perfactory Install Directory]\Perfactory RP\Buildstyles.
3. Press the "Install" button to copy the Buildstyles into the selected directory.
4. The Buildstyles should be registered before using them in Perfactory RP for Job file generation. The registration is described in detail on page 49 ('How to register a Buildstyle').




Material Module Setup V2.2.1
Installation of the material modules for the Desktop
1. Select a directory where you want to install the material modules, e.g. [Perfactory Install Dir]\Perfactory RP\Buildstyles
Select...
2. Press Install to copy the material modules into the selected directory
3. To register the material modules start the Perfactroy RP, open Buildstyle administration dialog, menu "Extras -> Buildstyle Administration..." and register the Buildstyles by adding them to the list.
Cancel
Install

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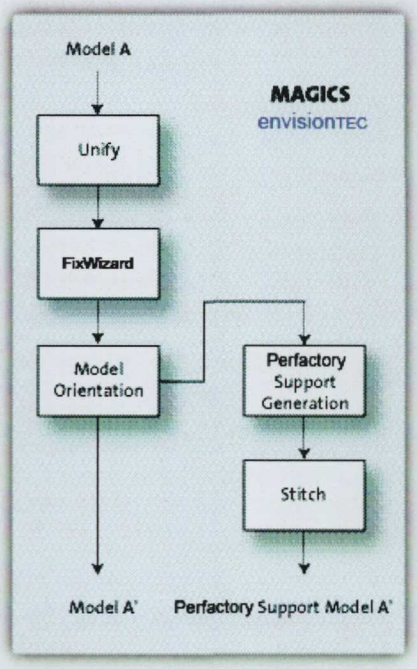
2.2 Basic Information about the Perfactory Software Suite

envisionTEC provides you two software packages to prepare the data for the Perfactory system:

- MAGICS envisionTEC
- Perfactory Software Suite

Magics envisionTEC

Use MAGICS envisionTEC for model preparation and support generation for every single model you want to build. Please read the MAGICS envisionTEC manual for a detailed description of all functions.



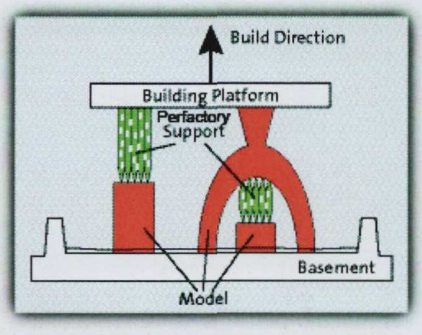
Since CAD systems don't always export clean STL files, correction may be needed before generation support:

- Use the Unify-operation to remove all self intersections automatically. This avoids that support structure intersects other model surfaces than the area to be supported.
- Use the FixWizard to repair flipped triangles, bad edges, gaps, ...

Check now if the model orientation is suitable for the building process. If not reorient the model.

Save the repaired and reoriented model and start the support generation, if necessary. Different parameter settings are available to automatically generate support structures. They were optimized for various model geometries: low volume models, high volume models and die-cast models.

You may edit the support structures generated by the support module by deleting those supports that you deem unnecessary based on your experience. For details on how to edit support structures generated by the support module Magics envisionTEC please refer to the corresponding section in the user manual for this program.



The support structures necessary for a 3D model depends largely on its geometry. In order to select certain supports, you need 0experience coupled with detailed knowledge of the building process on the Perfactory machine. The following gives you a short overview on what to take into account.

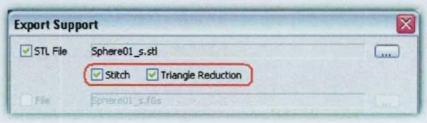
Support structures in the Perfactory machine are necessary to be able to pull off solidified areas from the basement surface that are not connected to the building platform / main body.

Since those areas are not sufficiently connected to previously solidified areas they cannot be pulled off the basement surface together with the main body of the model.

For this reason support structures must have a certain minimum density and thickness. This in turn depends on the area of the cured area to be pulled off. The accessibility of the support structures must be taken into account as they need to be removed later on.

The number of necessary supports depends largely on the orientation of the 3D model. Consider this when selecting a suitable orientation for the 3D model.

Use the stitch operation to repair automatically bad edges created by the support generator. This will reduce the amount of memory and increase the speed for data preparing. Save the generated support into the stl-format. Do that for every single model you want to build.



Perfactory Software Suite

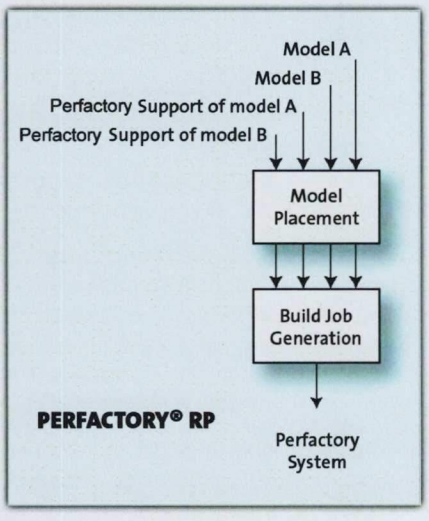
The modules of the Perfactory Software Suite will help you placing the 3D models on the building platform, converting them into voxel objects, generating Buildjobs and sending it to a Perfactory machine.

The **Perfactory StartCenter** allows you to launch the different modules of the Suite. Use the module **Perfactory RP** to group the repaired and re-orientated models and their corresponding supports on a virtual building platform. After placing you can create a Buildjob from the current scene for the Perfactory machine and send it to that machine.

The **Perfactory Direct** module is a printer like interface utility for the Perfactory machine. The module displays the progress of and information about a building process. The **Perfactory Job Modifier** module is used to check and modify jobfiles. This module is for advanced users only.

Use the module **Perfactory Parameter Editor** to work on parameter files e.g. for improving building accuracy or reducing material shrinkage effects by adapting the build platform. This module also allows you to apply updates and to create or recover backups. This module is for advanced user only.

The **Perfactory Buildstyle Editor** creates and modifies buildstyle files for the Perfactory machine.



2.3 Perfactory StartCenter

The Perfactory StartCenter makes all modules of the Perfactory Software Suite available for starting up. After installing the Perfactory Software Suite an icon is placed at the desktop

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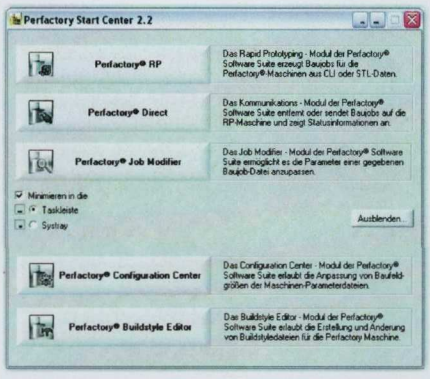
A double-click on this icon will start the Perfactory Start-Center. With this program you have a direct access to the software modules of the Perfactory Software Suite.


Perfactory Start Center 2.2
Perfactory® RP
Das Rapid Prototyping - Modul der Perfactory® Software Suite erzeugt Bauobs für die Perfactory®-Maschinen aus CLI oder STL-Daten.
Perfactory® Direct
Das Kommunikations - Modul der Perfactory® Software Suite entfernt oder sendet Bauobs auf die RP-Maschine und zeigt Statusinformationen an.
Perfactory® Job Modifier
Das Job Modifier - Modul der Perfactory® Software Suite ermöglicht es die Parameter einer gegebenen Baujob-Datei anzupassen.
Minimieren in die
Taskleiste
Systray
Ausblenden...
Perfactory® Configuration Center
Das Configuration Center - Modul der Perfactory® Software Suite erlaubt die Anpassung von Baufeld-größen der Maschinen-Parameterdateien.
Perfactory® Buildstyle Editor
Das Buildstyle Editor - Modul der Perfactory® Software Suite erlaubt die Erstellung und Änderung von Buildstyledateien für die Perfactory Maschine.

Direct Access to Perfactory Modules

After launching Perfactory StartCenter a dialog box appears which shows the main modules. A mouse click on the 'Advanced' button makes all available modules visible:

- Perfactory RP 2.1 (Section 2.4)
- Perfactory Direct 2.1 (Section 2.5)
- Perfactory Job Modifier 2.1 (Section 2.6)
- Perfactory Parameter Editor 2.1 (Section 2.7)
- Perfactory Buildstyle Editor 2.1
- The Perfactory Buildstyle Editor does not provide Perfactory Desktop machines.

'Minimize to' Checkbox

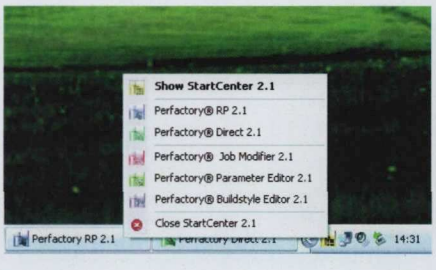
This checkbox controls the behavior of the Perfactory StartCenter after launching one of the Perfactory applications. Set the 'Minimize to' checkbox to activate this feature.

Additionally set the 'Taskbar' radio button for minimizing the Perfactory StartCenter dialog to the taskbar or select the 'Systray' option for minimizing it to the Windows Systray. The Systray is the area in the lower right corner of your desktop where also the Windows clock is located.

To open the Perfactory StartCenter again just double-click it in the Systray or click on it in the taskbar.

Close Perfactory StartCenter

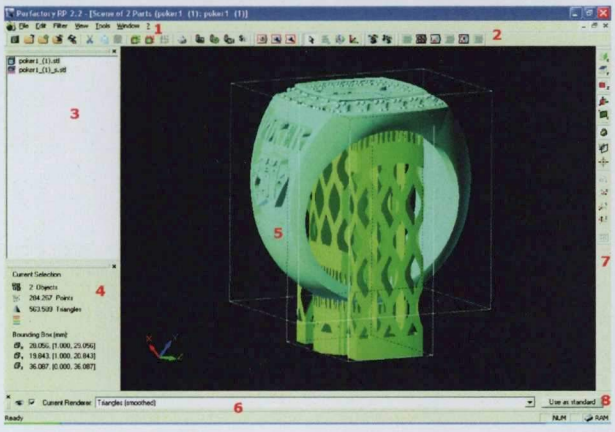
To close Perfactory StartCenter right-click the Perfactory StartCenter icon in the task bar and select 'Close StartCenter 2.1'. A click on X-button in the upper right corner of the Perfactory StartCenter will also close the application.



2.4 Perfactory RP

Use Perfactory RP to place the prepared models and its supports on the building platform and to generate Buildjobs for the Perfactory system.

The user interface of the Perfactory RP module contains the following areas:

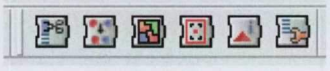


1. Menu Bar

The menu bar gives acces to functions for loading, processing and saving parts. You find also entries for generate a Buildjob, prepare the used Perfactory machine and build your job.

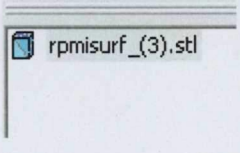
2. Direct Access Toolbar

The toolbar allows a direct access to functions of the different plug-ins without navigation through the menu.



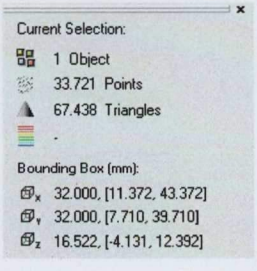
3. Explorer Window

This window shows the names and different informations of all loaded objects. If you select a name the corresponding object will be marked at the rendering area and you can use data-processing operations. If the Shift or the Ctrl key is pressed during a selection more than one object can be selected.



4. Information Window

This window contains information of the current selection like number of points or triangles.



5. Rendering Area

This window shows the rendered object geometry.

6. Selection of a Specific Renderer Mode

This windows allows you to select a rendering method which shows the data with diffenent level of detail. You can set the current renderer as the default renderer by pressing the 'Use as Standard' button.

The higher the level of detail the higher the used amount of RAM memory.

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7. Toolbar for Changing and Modifying Display Properties

Changing point of view, reset to standard view, switching between parallel and perspective projection, switch on/off of displaying the building platform are some of the functions, which are available at this toolbar.

8. Memory Management

You can select between two memory managements. The first is called 'RAM' and holds all data in the main memory. The second 'Swap' uses swap files.

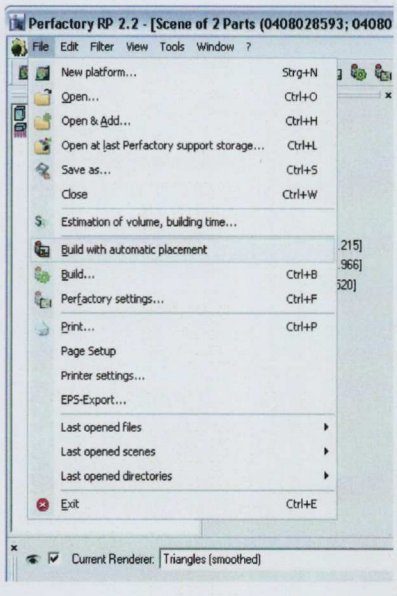
Select the 'Swap' option only if you process very large data files or if you do not have enough RAM memory.

2.4.1 Perfactory RP Menu Bar

The next chapter describes briefly the functions of the menu bar.

'File' Menu

This menu contains all functions to open, save, print and build a scene:



New Platform

Icon:

Menu: File ¬ New Platform

Hotkey: Ctrl + N

Description: This command creates a new platform (see 'How to Create a New Platform' on page 50).

Open...

Icon:

Menu: File ¬ Open...

Hotkey: Ctrl + O

Description: This command opens a dialogbox to load a data file (see 'How to Open a File' on page 50).

Open & Add...

Icon:

Menu: File ¬ Open & Add...

Hotkey: Ctrl + H

Description: This command opens a dialog box to load a data file which will be added to the current scene (see 'How to Open a File' on page 50).

Open at Last Support Storage...

Icon:

Menu: File ¬ Open at last support storage...

Hotkey: Ctrl + L

Description: This command opens a dialog box to load a data file. The path where the last support files were saved will be used as default path (see section 'How to Open a File' on page 50).

Save as...

Icon:

Menu: File ¬ Save as...

Hotkey: Ctrl + S

Description: This command opens a dialog box to save your data (see section 'How to Save a Scene to a File' on page 51).

Close

Icon: -

Menu: File ¬ Close

Hotkey: Ctrl + W

Description: This command closes the current scene.

Estimation of Volume, Building Time...

Icon:

Menu: File ¬ Estimation of volume, building time...

Hotkey: -

Description: This command opens a dialog box to calculate the volume, the estimated building time and costs of the selected parts.

Build...

Icon:

Menu: File ¬ Build...

Hotkey: Ctrl + B

Description: This command opens a dialog box to pre-process your data for job file generation and starts the building process (see section 'How to Create a Buildjob' on page 53).

Perfactory Settings...

Icon:

Menu: File ¬ Perfactory Settings...

Hotkey: Ctrl + F

Description: This command opens a dialog box to change the current material and machine settings.

Print...

Icon:

Menu: File ¬ Print...

Hotkey: Ctrl + P

Description: This command opens a dialog box to print the current content of the rendering view.

Page Setup

Icon: -

Menu: File ¬ Page setup

Hotkey: -

Description: This command opens a dialog box thatshow a printing Preview.

Printer Settings...

Icon: -

Menu: File ¬ Printer settings...

Hotkey: -

Description: This command opens a dialog box to select and setup your printer.

EPS Export...

Icon: -

Menu: File ¬ EPS Export...

Hotkey: -

Description: This command opens a dialog box to export a screenshot from the content of the rendering view as 2D EPS-Image.

Exit

Icon:

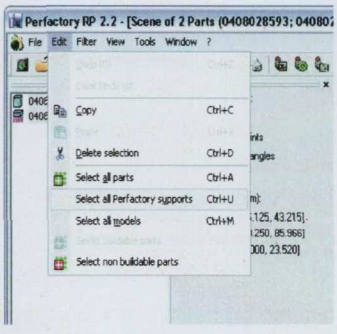
Menu: File ¬ Exit

Hotkey: Ctrl + E

Description: This command closes the Perfactory RP software.

'Edit' Menu

This menu contains some basic edit functions:



Undo

Icon: -

Menu: Edit ¬ Undo

Hotkey: Ctrl + Z

Description: This command restores the last state.

Clear Undo List

Icon: -

Menu: Edit ¬ Clear Undo List

Hotkey: -

Description: This command clears the undo list.

Copy

Icon:

Menu: Edit ¬ Copy

Hotkey: Ctrl + C

Description: This command makes a copy of the selected parts to the clipboard

Paste

Icon:

Menu: Edit ¬ Paste

Hotkey: Ctrl + V

Description: This command pastes the parts from the clipboard to the scene.

Delete Selection

Icon:

Menu: Edit ¬ Delete Selection

Hotkey: Ctrl + D

Description: This command deletes the currently selected part(s).

Select All

Icon:

Menu: Edit ¬ Select all

Hotkey: Ctrl + A

Description: This command selects every loaded part.

Select All Supports

Icon: -

Menu: Edit ¬ Select all supports

Hotkey: Ctrl + U

Description: This command selects all loaded support parts.

Select All Models

Icon: -

Menu: Edit ¬ Select all models

Hotkey: Ctrl + M

Description: This command selects all loaded model parts.

Select All Buildable Parts

Icon:

Menu: Edit ¬ Select buildable parts

Hotkey: -

Description: This command selects all parts that completely placed inside the build platform.

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Select all Non Buildable Parts

Icon:

Menu: Edit ¬ Select non buildable parts

Hotkey: -

Description: This command selects all parts that not completely placed inside the build platform.

'Filter' Menu

This menu contains all filters for data processing:

Automatic Placement

Icon:

Menu: Filter ¬ Automatic Placement

Hotkey: -

Description: This command starts a filter to make an automatic placement (nesting) and levelling of all selected parts on the building platform. (see also the section How to Perform an 'Automatic Placement' on page 52).

Object Merging

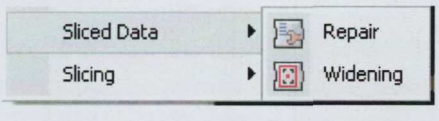
Icon:

Menu: Filter ¬ Object Merging

Hotkey: -

Description: This command is enabled if more then one file is loaded. It will merge these files to one. Further information can be found in section 'How to Merge Some Files to One' on page 56.

'Filter ¬ Data' Menu



Repair

Icon:

Menu: Filter ¬ Sliced Data ¬ Repair

Hotkey: -

Description: This command starts a filter to repair damaged/invalid layer data.

Widening

Icon:

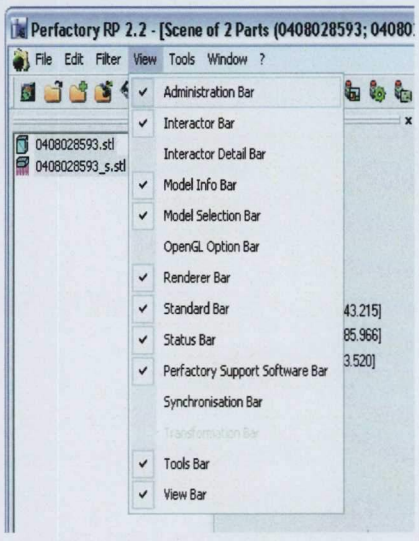
Menu: Filter ¬ Sliced Data ¬ Widening

Hotkey:

Description: This command widens support data e.g. a line to a thin 2D-bar. This kind of supports are required for building on a Perfactory system. Further information can be found in the section 'How to Widen Support Data' on page 57).

'View' Menu

This menu contains an overview of all available toolbars. You can enable/disable a toolbar by clicking at the corresponding entry in this menu.



'Tools' Menu

This menu contains access to tools like 'Magics envisionTEC' and settings for language, paths and plugins.

Launch Support Program

Icon:

Menu: Tools ¬ Launch Support Program

Hotkey: -

Description: This command launches the external software for Support generation (Magics envisionTEC).

Switch to Support Program

Icon:

Menu: Tools ¬ Switch to Support Program

Hotkey: -

Description: This command switches to the external support software (Magics envisionTEC).

Locate Support Program...

Icon:

Menu: Tools ¬ Locate Support Program...

Hotkey: -

Description: This command sets the path to the external support software (Magics envisionTEC).

Data Plugin Options...

Icon:

Menu: Tools ¬ Data Plugin Options...

Hotkey: -

Description: This command opens a dialog box to edit the settings of the filter plugins.

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Buildfilter Plugin Options

Icon:

Menu: Tools -> Build plugin options

Description: This command opens a dialog box to administrate the Buildstyles.

Data Plugin Ordering...

Icon: -

Menu: Tools ¬ Data Plugin Ordering...

Hotkey: -

Description: This command opens a dialog box to change the (priority) order of the rendering plugins.

Renderer Plugin Options...

Icon:

Menu: Tools ¬ Renderer Plugin Options...

Hotkey: -

Description: This command opens a dialog box to change the (priority) order of the rendering plugins.

Plugin Registration...

Icon:

Menu: Tools ¬ Plugin Registration...

Hotkey: -

Description: This command opens a dialog box to search and register plugins.

Memory Management...

Icon:

Menu: Tools ¬ Memory management...

Hotkey: -

Description: This command opens a dialog to switch between using RAM or Swap File for data storage.

Select Path to Machine Parameter...

Icon:

Menu: Tools ¬ Select Path to machine Parameter...

Hotkey: -

Description: This command allows to set the path to the machine parameter files.

Select Path to Material Parameter...

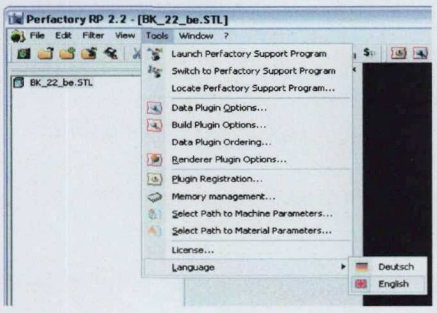
Icon:

Menu: Tools ¬ Select Path to Material Parameter...

Hotkey: -

Description: This command allows you to set the path to the material parameter files.

'Tools ¬ Language' Menu



Deutsch

Icon:

Menu: Tools ¬ Language ¬ Deutsch

Hotkey: -

Description: This command switches to the German language set.

English

Icon:

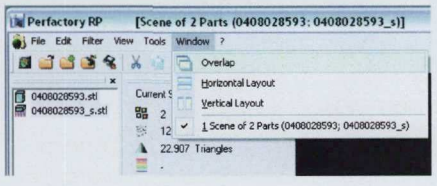
Menu: Tools ¬ Language ¬ English

Hotkey: -

Description: This command switches to the English language set.

After changing the language set you have to restart the software!

'Window' Menu



This menu offers some kinds of window positioning and an overview of the opened scenes:

Overlap

Icon:

Menu: Window ¬ Overlap

Hotkey: -

Description: This command arranges the open rendering views that the foreground window overlaps the other.

Horizontal Layout

Icon:

Menu: Window ¬ Horizontal Layout

Hotkey: -

Description: This command arranges the open rendering views by positioning horizontal.

Vertical Layout

Icon:

Menu: Window ¬ Vertical Layout

Hotkey: -

Description: This command arranges the open rendering views by positioning vertical.

[List of Open Scenes]

Icon: -

Menu: Window ¬ [List]

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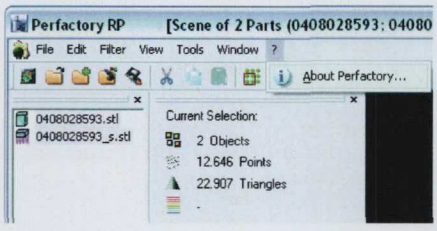
Hotkey: -

Description: These are the open scenes. Selecting a scene with a mouse click will bring the window in the foreground.

Help Menu ('?')

This menu is for help and information purpose.



About Perfactory

Icon:

Menu: ? ¬ About Perfactory

Hotkey: -

Description: This command opens the 'About' dialog box with some credits and copyright information.

'Interactor' Toolbar of Perfactory RP

Use this toolbar to align and position your parts and to navigate through the layers of a sliced part.

This toolbar exists only as a button bar.

Standard Display Mode

Icon:

Description: This command executes/finalises the other commands of this toolbar. Use every 'non-Interactor' - function in this mode/with this tool only!

Re-alignment

Icon:

Description: With this tool you can align a triangle of a model to the building plate. After you have selected a triangle (with left-click) leave this tool by using the arrow-icon. Then the alignment will be executed (see also page 53 'How to Change a Parts Orientation').

Geometry Transformations

Icon:

Description: With this tool you can move, rotate and scale your part. After you have made your transformations leave this tool by using the arrow-icon . Then the Transformation will be confirmed (see also page 53 'How to Perform Geometry Transformations Like Moving, Rotating or Scaling').

Layer Selection

Icon:

Description: With this tool you can navigate through every single layer of sliced data. This tool is only enabled if you have one single sliced part selected. Leave this tool by selecting the the arrow-icon. Further information can be found on page 53 ('How to Perform Geometry Transformations Like Moving, Rotating or Scaling').
The Perfactory Software Suite can only **load** sliced data. They will be transformed into a voxel cube before Buildjob generation..

To leave the interaction mode you have to press the button for the standard display mode.

The Geometry transformation mode can be fast and easy entered and leaved also with a click on the middle mouse button.

2.4.2 Perfactory RP View Bar

Use this toolbar to change viewing/selecting mode. All functions don't change the data of a part.

View Along x, y, z axis

Icon:

Description: These buttons allow you to align the camera view to the x,y or z - plane.

Switch On/Off Coordinate Axis

Icon:

Description: This button shows/hides the coordinates axis.

Show/Hide building Platform

Icon:

Description: This button shows/hides the building platform

Link Model and Support Data

Icon:

Description: This button locks all selected models to their supports. If this function is enabled and you select a model, all corresponding supports will be selected too.

Ortho/Perspective Projection

Icon:

Description: This button switches the view between the perspective and the orthogonal projection.

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Standard View

Icon:

Description: This button resets the view to the standard view.

90° Rotation

Icon:

Description: This button rotates the view around the axis defined with one of the following toolbar buttons: .

Fix Rotation to Axis

Icon:

Description: This buttons defines the axis for the rotation of the view (see previos explanation). To leave this rotation mode simply press the current selected button again.

⇒

2.4.3 Perfactory, RP How-To Manuals

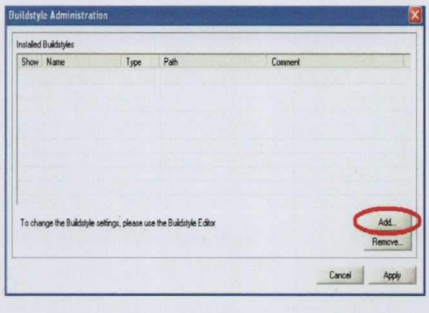
In the following 'How-to' manuals some important task with the Perfactory RP software are described.

How to register a Buildstyle

To install the Buildstyle proceed as follows:

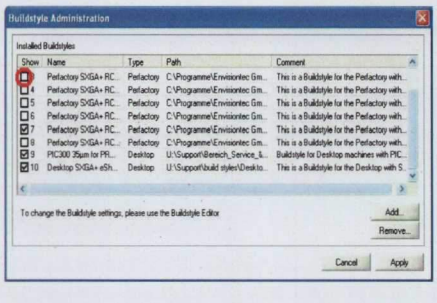
1. First open the 'Perfactory StartCenter' and start 'Perfactory RP'.

2. Press the'Buildfilter Plugin Options´ icon( ) or select 'Tools > Buildstyle Administration...' from the menu. The 'Buildstyle Administration' dialog appears, it contains a list of installed Buildstyles(The list will be empty before the Build style registration).



3. Click the 'Add...', search for the Directory where you have saved the Buildstyles, select the desired Buildstyle from the list and confirm with 'Open'

4. The Buildstyles that correspond to the Aureus Machine have the extension (.bsz). You need to select in the type of file (.bsz) to find the Buildstyles for Aureus. The Buildstyles can be added one by one only.



5. In the 'Show' column check the box for the desired Buildstyle(s) and confirm with 'Apply'.

The material modules are installed now and the software is ready for producing a Buildjob.

Further information on installing and using Buildstyles can be found in section 'How to Administrate Buildstyles' on page 58.

How to Create a New Platform

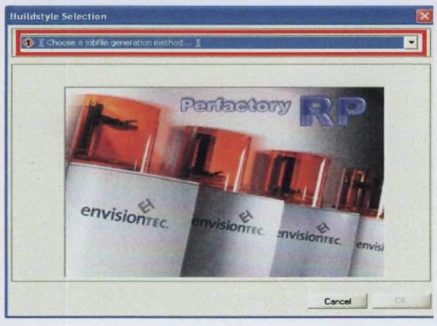
First press the 'New platform' icon ( ) or select the 'New Platform' menu entry.

The 'Buildstyle Selection' dialog box appears.

For the first time you should choose 'A jobfile generation mthod´, Please use ´Jobfile generation using Buildstyles´.

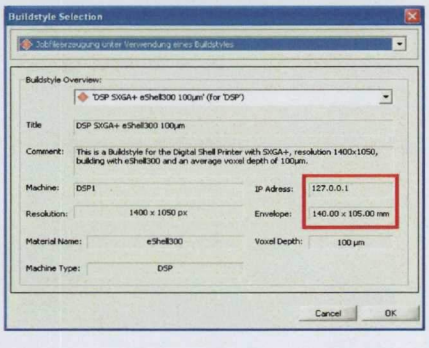
The dropdown list offers an overview of all installed and enabled Buildstyles.

Select the Buildstyle that you like to use for Buildjob generation. Ensure that you select the Buildstyle for the correct machine type.



The machine type can be determined after selecting 'Tools > Plugin Registration' and clicking the 'Select Buildfilter' button.

After selecting the Buildstyle the dialog window will show some settings of this Buildstyle(Network settings, Build enveloppe siyze...). You cannot adjust the Buildstyle settings in this dialog window. The default values of building parameters are well selected. So only change the Network parameters unless cogent reasons are available.



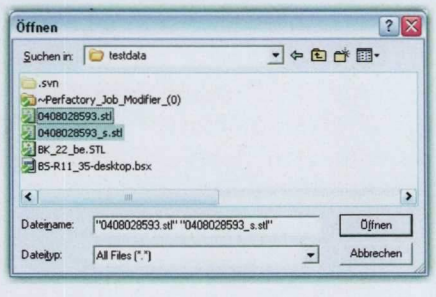
In the case where the Buildstyle settings or some building parameters should be changed, intructions can be found in section 'Perfactory Buildstyle Editor (paragraph 2.7)on page 69.

Confirm the 'Buildstyle Selection' dialog by pressing 'OK'. The new platform will be created. If you press 'Cancel' the platform will also be created but you are not able to create a Buildjob.

How to Open a File

First press the 'Open' icon ( ) from the toolbar or select 'File > Open' from the menu. A dialog box appears where you can select the file(s) to be loaded. Supported file formats are stl-, cli- and slc-files.

If you want to select several files at once press either the Shift key or the Ctrl key while selecting your files or use the selection rectangle by pressing and holding the left mouse button while moving the mouse.



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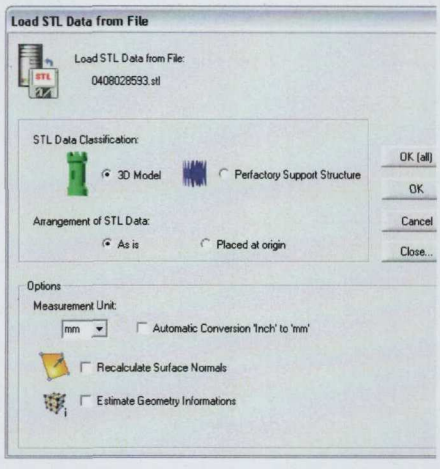
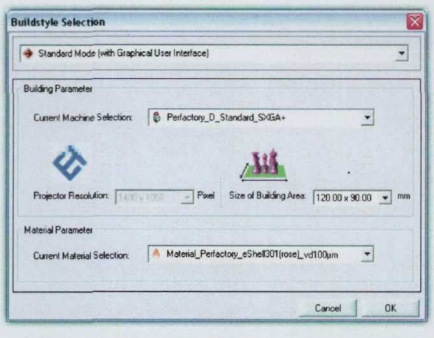
After selection press the 'Open' button. The 'Load STL Data from File' dialog box appears, offering some options to manipulate the loading process. Press 'OK' to start loading.



Now the 'Buildstyle Selection' dialog is displayed. You can choose between predefined Buildstyles and the 'Standard Mode (with Graphical User Interface)', which is not useable together with Perfactory Desktop machines. Confirm with 'OK' to finish loading. The opened scene will be visible in the main view. If you press 'Cancel' instead of 'OK' the scene will also be loaded but you are not able to create a Buildjob. Further information can be found on page 50 ('How to Create a New Platform').



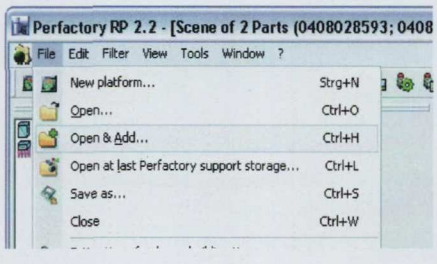
To add further 3D models and their supports to an existing scene press the 'Open & Add' icon ( ) or select 'Open & Add' from the menu.

How to Save a Scene to a File

Requirement:

At least one open data file.

First select 'File > Save as...' from them menu.


Perfactory RP 2.2 - [Scene of 2 Parts (0408028593; 0408
File Edit Filter View Tools Window ?
New platform... Strg+N
Open... Ctrl+O
Open & Add... Ctrl+H
Open at last Perfactory support storage... Ctrl+L
Save as... Ctrl+S
Close Ctrl+W

A dialog box appears with a list containing the selected files. Now you can (un-)select the files you wish to save.

Use the 'Save selection at once' button to save all parts with the same settings at one path. Supported file formats are .stl for 3D-data and .cli for layered data.

Press the 'Save selection separately' button to save every file with his own settings/path etc.

Press and hold the 'Ctrl' key to select resp. unselect multiple files simply by left-clicking on the filename.

You can do similiar with the shift key and the selection rectangle that you get if you press and hold the left mouse button while moving the mouse.

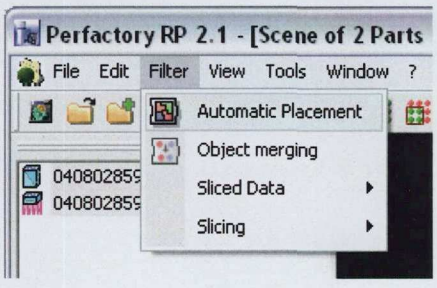
How to Perform an 'Automatic Placement'

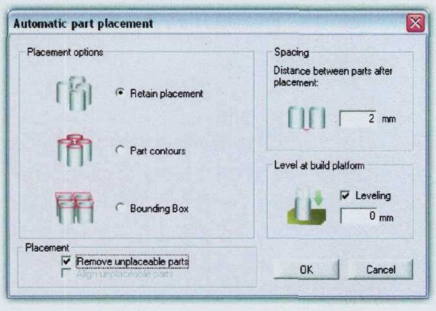
Requirements:

At least two open data files.

First press the icon for 'Automatic Placement' ( ) or select 'Filter > Automatic placement' from the menu.

A dialog box appears which offers several options:





Placement Options

There are three placement options available:

Retain Placement

'Retain placement' means that the current place-ment will not change. This option is useful if you want only level the parts to the building plate.

Part Contours

'Part contours' means that the parts will placed according there contours. This is the most compact placement method. This placement works only with .stl data files.

Bounding Box

'Bounding Box' means that the parts will placed according there bounding rectangles (boxes). This placement method is not very tight but fast and allows in some cases more copies of the scene on the building plate.

Placement

For placement post-processing there can be used either 'Remove unplaceable parts' or 'Align unplaceable parts'. The option 'Remove unplaceable parts' removes every parts from the build platform that cannot be placed automatically. Alternatively the option 'Align unplaceable parts' aligns the unplaceable parts side by side outside the build platform.

> The 'Align unplaceable parts' option is useful for manually optimizing the placement results because it allows easily to view, select and move the unplaced parts.

Spacing

Further you can set a Spacing. That means every part will get this spacing distance to other parts.

Level at Build Platform

The last option is 'Leveling'. This option levels the parts to the building plate. Every levelled part is placed exactly to the building plate. It is recommended to enable this option!

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Make your settings and press 'OK'. Now the placement process will be performed.

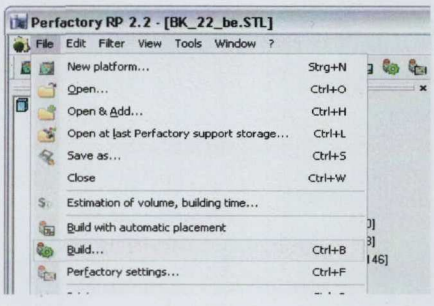
How to Create a Buildjob

Requirements:

At least one open stl data file placed and levelled on the building platform.

Press the 'Build...' icon ( ) or select 'File > Build...' from the menu.

The Buildjob generation starts immediately after some general tests. No further settings are needed.



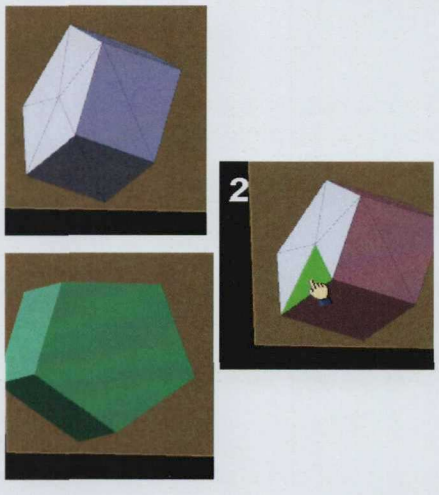
How to Change a Parts Orientation

Requirements:
At least one open stl data file.

First press the icon from the Interactor toolbar for 'Re-Alignment' ( ). The triangles of the model will be rendered on the surface.

Select that triangle that you want align to the building plate with a left mouse click.

To perform this operation, simply go back to the standard mode by pressing the arrow-icon ( ) in the Interactor toolbar.

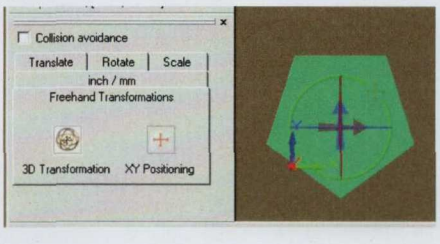


How to Perform Geometry Transformations Like Moving, Rotating or Scaling

Requirements:
At least one open data file.

First press the icon from the Interactor - toolbar for 'Geometry transformation' ( ) or press the middle mouse button.

There are different possibilities to perform geometry transformations. All of this possibilities are controlled by a tabbed window at the bottom left corner.

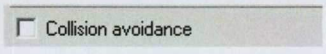


After doing the transformation click on the arrow-icon ( ) in the Interactor- toolbar or press the middle mouse button to go back to the standard mode. If you don't do this, the transformations won't be finalised!

The geometry transformation mode can easily accessed and leaved by using the middle mouse button!

To use the 'middle mouse button' - feature please make sure that the middle mouse button is configured as 'middle mouse button'!

The option 'collision avoidance' prevents you from positioning the part outside the building platform.



If 'collision avoidance' is enabled, parts which are not placed inside the building platform can't be moved!

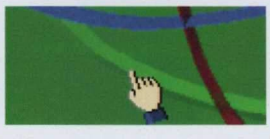
The tab 'Freehand Transformation' offers you two ways to transform the part with your mouse.

3D transformation

The first option is the '3D transformation'. It draws transformation markers within your selected parts.

The big arrows are for translation(moving). Point and click on such an arrow. Hold the mouse-button pressed and move the mouse in/against the direction of the arrow. The part should move in corresponding direction.

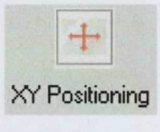
The rotation works the same way: But instead of the arrows use the green circles.



Finally you can scale the part. Instead off the arrows or the circles, select the crossed arrows.

XY Positioning

The second way is the 'XY Positioning'. It draws a flat plane over your selected parts. This plane is a transformation marker for easy x/y - Transformation along the building plate. This way is useful for fast and easy positioning. If 'collision avoidance' is enabled and the part is not placed inside the building platform, the plane will be colored red.



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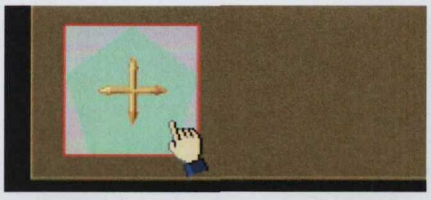
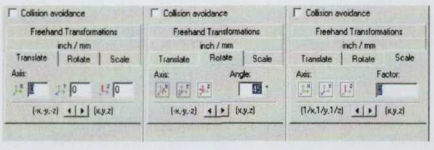
Point and click on this plane and hold the mouse button pressed. Now you can freely move the part on the building plate.



Translation/Rotation/Scale

The tabs 'Translation/Rotation/Scale' allows you to transform the parts by entering parameter values:



Translation:

Enter the values you want to translate e.g. 0 mm in x-direction, 5 mm in y direction and 0 mm in z-direction. Pressing the left button will translate the part [-] 5 mm in y direction. Pressing the right button will translate the part [+] 5mm in y - direction.

Rotation:

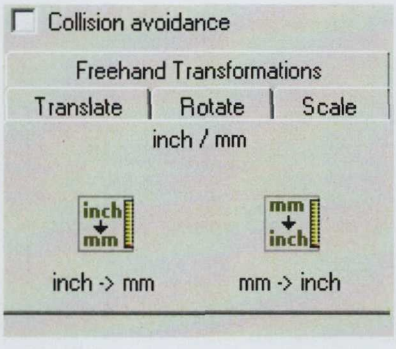
Enter the rotation angle and select a rotation axis. By pressing the left or the right button the part will rotate around the selected axis by the given angle in clockwise/ counter-clockwise direction.

Scale:

Enter the scaling factor and select your scaling directions. By pressing the left/right button, the part will be scaled up/down (compressed/stretched).

inch/mm, mm/inch conversion:

This tool allows you to convert the units of a part, e.g. if a part build in inches was loaded in mm it would be very small (1/25.4 of the original size). To recalculate the original size press the 'inch -> mm' button and every unit will be multiplied with 25.4.



Explanation

The stl data format works only with numbers without units (e.g. 1 instead of 1mm) so the parts can be in inches or in mm. The software works internally with mm. If you load a part with a length of 1 inch it will handled as part with 1 mm. To get the correct measurements simply convert your units from 'inch to mm' - every unit will be multiplied wit the conversion factor 25.4 - and the converted part has the length 25.4 mm and will be handled as part with 25.4 mm length which is the same as 1 inch.

To finalize the transformation click on the arrow-icon ( ) in the 'Interactor' toolbar.

How to Convert a Model from Inch to mm Resp. mm to Inch

Have a look at , "How to Perform Geometry Transformations Like Moving, Rotating or Scaling" on page 53.

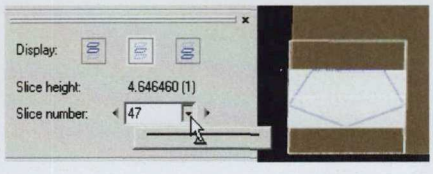
How to Perform Layer Selections on Layered Data

Requirements:

At least one open and selected layered (slc, cli) data file.

Layered data can only be loaded (not created) and are converted into voxel cubes.

First press the ccon for 'Layer Selection' ( ). On the bottom left corner a toolbar window appears and the rendering view is only showing one layer.



You can show every single layer by entering the number. Another way is to click at the combobox button (see picture). By moving the slider you can navigate through all layers.

Three display options are available:

Enabling this button will show all layers from the current to the top.

Enabling this button will show an transparent plane indicating the plane of the current layer.

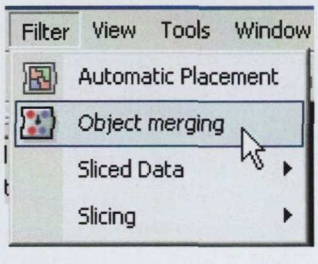
Enabling this button will show all layers from the current to the bottom.

After using this Tool go back to the standard mode by pressing the arrow-icon ( ) on the Interactor - toolbar.

How to Merge Some Files to One

Requirements:

At least two open data file.



Select the parts you want to merge and click on the button at the toolbar ( ) or click on the menu 'Filter' and choose the option 'Object merging' to start the operation. All selected parts will be merged to one.

This function is useful if you want to process some files over the complete process in the same manner.

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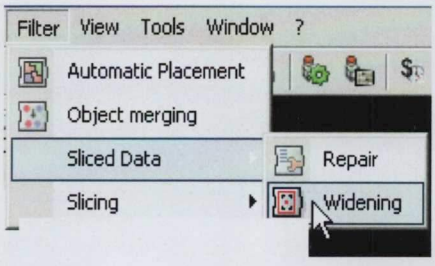
How to Widen Support Data

Requirements:

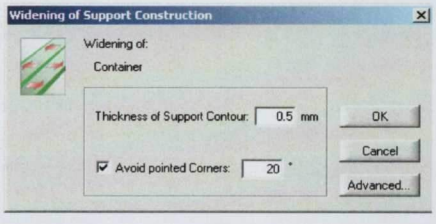
At least an open data file.

To widen one or more layered support structures first selected them all. To pick different width for different support structures select them separatly:

To widen a selection click on the button at the Toolbar ( ) or click on the menu 'Filter', select the menu entry 'Sliced Data' and choose the option 'Widening'.

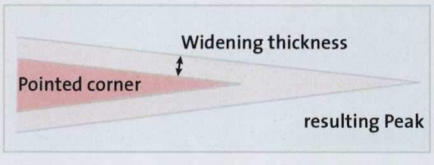


A dialog box appears where you can enter the thickness of the support contours.

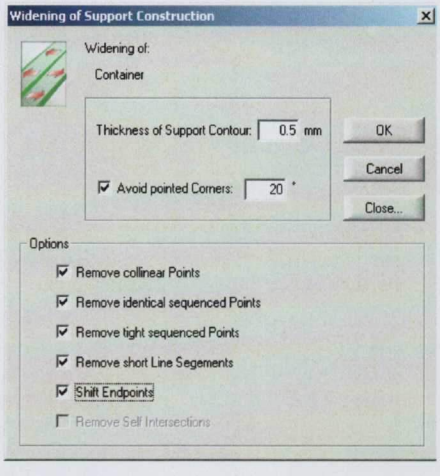


Avoid Pointed Corners:

Widening a pointed corner will move the peak a long way off the original peak. The smaller the angle between the edges of the pointed corner is the larger is the distance between the peaks. To avoid this enter an angle which lops the widened corner if the angle between the edges is smaller than the entered angle.



If you click at the advanced button you you get some more options. You can change several options which affect the widening result:



Remove Collinear Points:

Select this option for a correct widening operation!

Remove Identical Sequenced Points:

Select this option for a correct widening operation!

Remove Tight Sequenced Points:

To reduce the number of points of high detailed contour lines select this option.

Remove Short Line Segments:

To reduce the number of points of high detailed contour linesselect this option.

Shift Endpoints:

The widening operation will move the points only perpendicular to the contour line. In some cases this will produce small gaps between the widening support structures. Select this option to close this gaps.

Remove Self-Intersections:

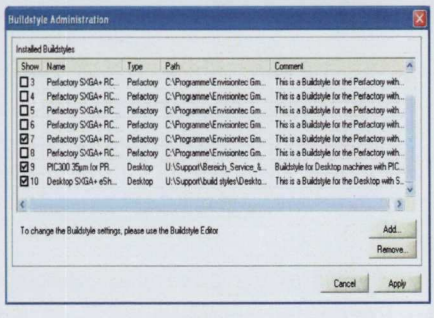
Self intersections are a result of overlapped surfaces of a single 3D model and causes errors during the conversion to bitmap masks This option is not necessary if the option Auto Orientation was selected during the slicing operation.

How to Administrate Buildstyles

The Buildstyles contain all predefined parameters for a specific material, which are necessary to generate a job file and send it to a specific machine. In order to use the Buildfilters you have to introduce them to the Perfactory software.

First click the 'Buildfilter Plugin Options' icon or select 'Tools\Buildstyle Administration...' from the menu.

A dialog box appears which contains an overview of all available Buildstyles, enabled Buildstyles as well as thedisabled ones.

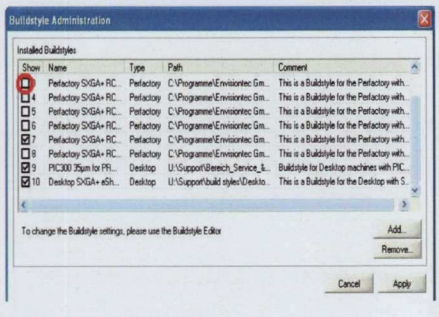


The Buildstyle Administration offers further the following options:

1. Enable/Disable Buildstyles
   Check the Buildstyle in the list to show it in the 'Buildstyle selection' dialog (refer to page 50 ('How to Create a New Platform').

2. Add additional Buildstyles
   Use the 'Add...' button to open a dialog that allows you to select one or more Buildstyles that should be added (linked) to this Buildfilter.

3. Remove selected Buildstyles
   Use the 'Remove...' button to remove the current selected (for selection use right mouse button) Buildstyle from the list. This removal will not delete the Buildstyle file.



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EnHow to Administrate Plugins

First press the icon for 'Plugin Registration or select the menu entry 'Plugin registration'.

A dialog box appears which offers on the left side an overview about the registered plugins and on the right side the functionality to select the directory for the plugins and register them.

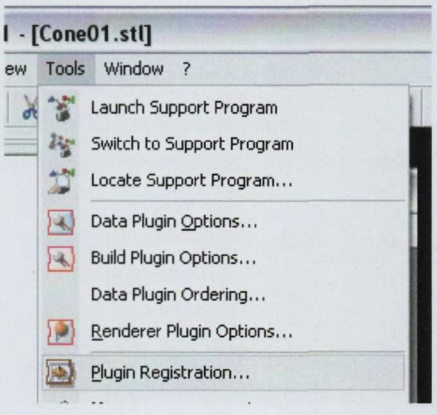
The left tree view displays all registered plugins and provides more detailled information like Name, Path, Version, etc.

To register new plugins first ensure that the path for the plugin directory is correct. The directory can be changed using the 'Browse' button ('...').

To start the registration procedure press the 'Search and Register' button.

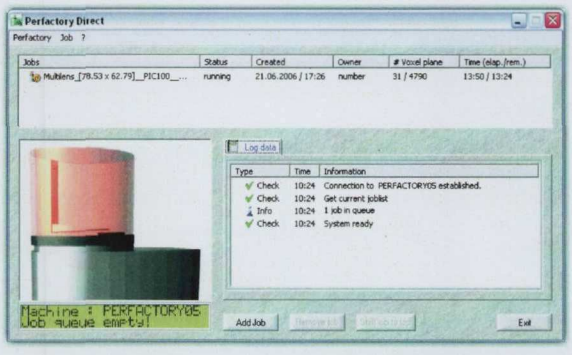
There also exists an option to enable or disable Build-filter plugins depending on their destination machine type. Press the 'Select Buildfilter' button to call the dialog to change these settings:

If you for example disable 'Use Vanquish' then every Buildfilter that generates Buildjobs for the 'Vanquish' machine will be disabled.



2.5 Perfactory Direct

The module Perfactory Direct is a printer like interface utility which allows to communicate with a Perfactory machine, e.g. to check the status of the building process, transfer a jobfile to the machine or download latest logfiles for troubleshooting.



The Perfactory Direct is started from the Perfactory StartCenter. After loading the program tries to contact the last used Perfactory machine and shows the main screen. That may take a few seconds.

All functions are accessable from the menu bar, some can also be accessed by buttons.

2.5.1 Perfactory Direct Menu Bar

This section briefly describes the functions of the menu bar.

'Perfactory' Menu

This menu contains all functions to communicate with a Perfactory machine:

Select Machine

Icon:

Menu: Perfactory ¬ Select machine

Description: This command allows to select and contact a Perfactory machine.

Reconnect Machine

Icon:

Menu: Perfactory ¬ Reconnect machine

Description: This command reconnects to a machine.

Update Machine

Icon:

Menu: Perfactory ¬ Update machine

Description: This command transfers an update for the Perfactory machine

Download Logfiles

Icon:

Menu: Perfactory ¬ Download logfiles

Description: This command downloads logfiles from the Perfactory machine.

Exit

Icon:

Menu: Perfactory ¬ Exit

Description: This command closes Perfactory Direct.

'Job' Menu

This menu contains all jobfile related functions.

Select Machine

Icon:

Menu: Job ¬ Add job

Description: This command transfers a jobfile to the Perfactory machine.

Remove Job

Icon:

Menu: Job ¬ Remove job

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Description: This command allows the owner of a job to remove it from the machine.

Shift Job

Icon:

Menu: Job ¬ Shift Job

Description: This command Shifts the selected job in the queue by one position.

Remove All Jobs

Icon:

Menu: Job ¬ Remove all jobs

Description: This command allows every user to remove all jobs from the machine.

Refresh View

Icon:

Menu: Job ¬ Refresh view

Description: This command refreshes the machine status informations.

Help Menu ('?')

This menu contains general informations.

Auto Help

Icon:

Menu: ? ¬ Auto Help

Description: This command enables 'Auto Help' feature.

About

Icon:

Menu: ? ¬ About

Description: This command opens the 'About' dialog box.

2.5.2 Perfactory Direct How-To Manual

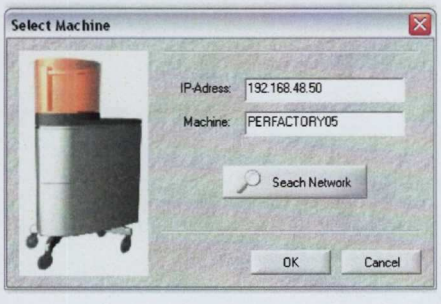
This section contains some how-tos concerning the Perfactory Direct software.

How to Transfer a Jobfile to the Perfactory Machine

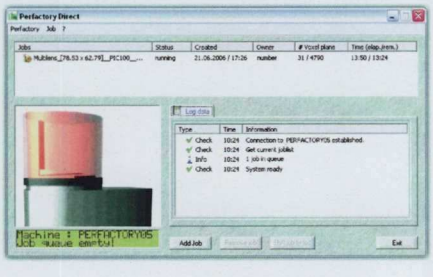
As the first step you have to connect Perfactory Direct to the machine where you want to transfer the jobfiles to. Therefore enter the 'Perfactory' menu and click 'Select machine...'.

The 'Select Machine' dialog will appear.

Enter the IP-address or the name of the Perfactory machine at the appearing dialog box. To search the network for all machines which are online and to select one of these press the button 'Search Network'



After a successful connection the selected Perfactory machine replies the current machine status with the job name, machine status, creation date and time, owner, number of the voxel plan, the machine is currently building, and the elapsed and remaining time period for all Buildjobs.



To transfer a Buildjob to the current machine select 'Job > Add Job' from the menu or click the 'Add Job' button. A 'File open...' dialog appears where you can select all jobfiles that should be transferred to the Perfactory machine. Press 'Open' to confirm your selection. Subsequently all selected jobfiles will be transferred.

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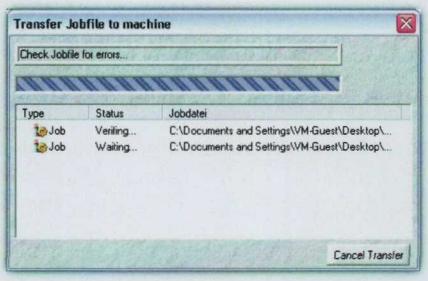
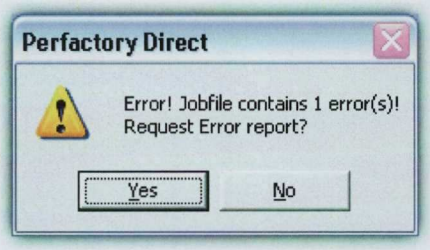
While transferring a status dialog appears. This dialog informs you about the progress of transferring and verifying the the jobfile(s). Verifying may take several minutes, especially for large jobfiles.

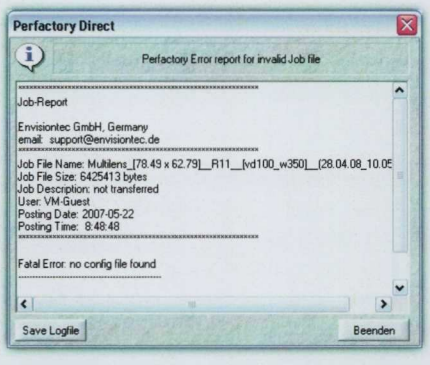
While verifying the progressbar is continuesly repeating! After successful transferring the dialog disappears automatically.



If errors are detected while transfering, you will receive an error message with the option to request a detailled error report.



The error report contains several information about the machine, the jobfile and the detected errors to simplify troubleshooting. This report can be saved to disk as textfile.



If there appears an error for nearly every voxel matrix, (eg. 'Voxel matrix X, Error: Parameter shift(10) out of range [0;3]'), then you probably tried to add a jobfile with ERM functionality to a machine without ERM functionality (activated).

How to Remove Jobfiles from the Perfactory Machine

To remove a specific job, highlight that job in the job list and click on the 'Remove Job' button or select 'Job > Remove Job' from the menu. You can only remove jobs you are the owner of!

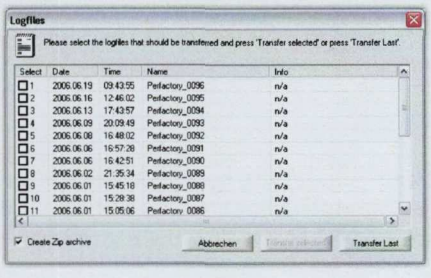
The 'Remove all jobs' function removes all jobs from the machine except that one that is building. This function doesn't care about the 'owner' status.

How to Download Logfiles from the Perfactory Machine

To download the logfiles from the connected machine select 'Perfactory > Download logfiles' from the menu.

A dialog window listing all available logfiles appears. The logfiles are sorted by date. You can select the files you need manually by activating the corresponding checkboxes or simply pressing the 'Transfer last' button.

The 'Transfer last' function will open a dialog window that offers to transfer the last three logfiles. If you need more logfiles than you can change this value. Press 'OK' to confirm the value and the files will be stored in a zip archive on your harddisk.



It is recommended to enable the 'Create zip archive' function. This will largely decrease the size of the files for e.g. email transfer.

2.6 Perfactory Job Modifier

The Perfactory Job Modifier is a program that enables you to open existing Perfactory Jobfiles, to view and modify the building parameters and to navigate the voxel cube. In section 'How to Modify a Jobfile' on page 68 you will find a step by step guide to modify a jobfile.

The Job Modifier is started from the Perfactory Start-Center or automatically opend by double-clicking a jobfile.

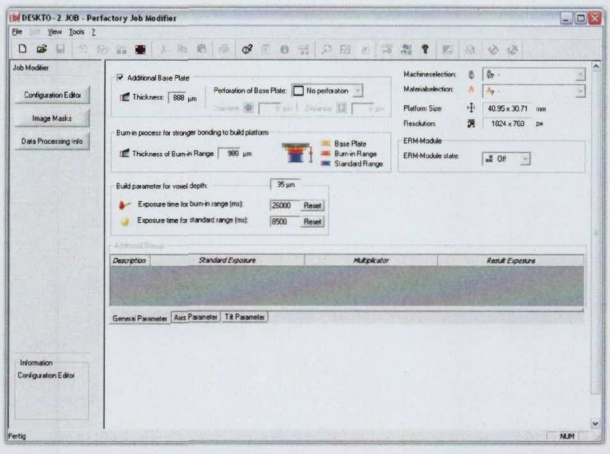
The buttons on the left view are for switching between the Views. There are three views available which are explaned in the next sections:

- Configuration Editor
- Image Masks
- Data Processing Info

Configuration Editor

The Configuration Editor shows the building parameter for the jobfile in an overview.

The build parameters can be edited on different parameter sheets. You can alter among them with the 'General Parameter' tab, the 'Axis Parameter' tab and the 'Tilt Parameter' tab.

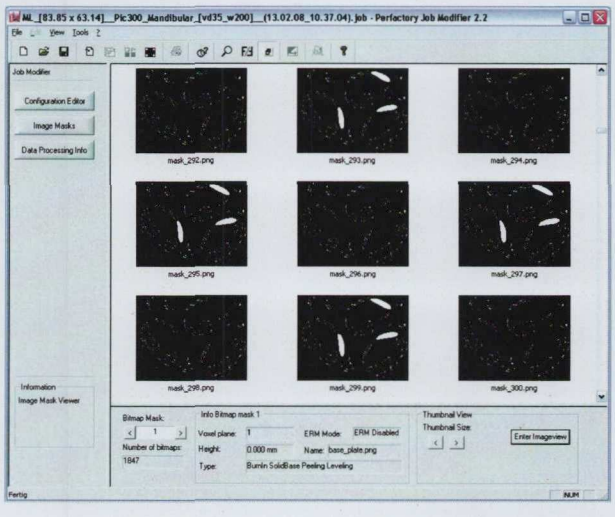


Most parameters can be edited by simply selecting the input field with a mouse click. The changed values will be checked and committed when leaving the field. All changes will only be applied by saving the jobfile!

We highly recommed not to edit parameters or values which you do not exactly know what they are for, as bad build results and much wasted time are likely.

Image Masks

The Image Masks view calculates preview images from the voxel matrix. They are identical to the raster planes that are projected by the Perfactory machine so they can be used to check whether the bitmaps are without errors like flashing, filled holes, etc.

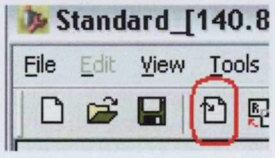


There are two viewing modes available: The default mode is the 'Thumbnail' mode. In this mode the whole voxel cube of the jobfile will be divided into small preview images.

Pressing the 'Enter Imageview' button or simply double-click an image opens the 'Single Image' mode. In this mode only one image fitted to the screen is viewable. This Image can be zoomed, flipped, etc.

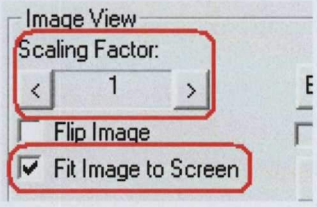
To leave the 'Single Image' mode simply press the 'Thumbnail View' button or double-click the image again.

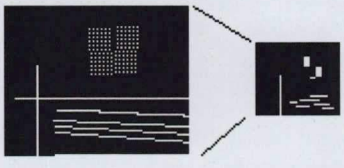
To save the current selected image as bitmap file to your disk press the 'Extract' button from the toolbar.



Scaling and Resizing:

Please keep in mind that 'resizing' changes the visibility of details of the bitmap! 'Fit Image to Screen' will scale the bitmap to completely fit the viewable area. In most cases the size will be reduced so some details will be not visible! Use 'Scaling Factor = 1' and disable 'Fit Image to Screen' to view the non-resized bitmap image!





Scaling: 1x

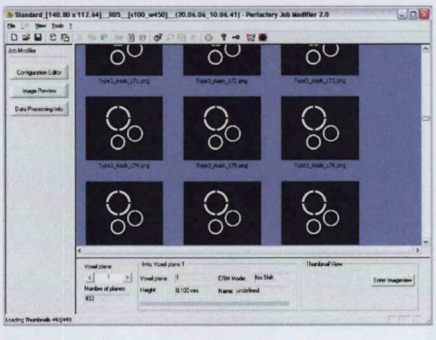
Scaling: 0.25 (Thumbnail)

The 'Thumbnail View' Mode

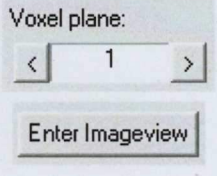
The thumbnail view gives an overview of all bitmaps of a jobfile. Every bitmap will be shown as small thumbnail image with its corresponding file name.

To enlarge the image enter the 'Single image View' mode by pressing the 'Enter Image View' button or making a doubleclick with the left mousebutton on the selected image.

This view offers the following tools:



1. The 'Voxel plane' selection where you can enter the number of the plane that should be selected or increase/decrease the current number with the '>' and '<' - buttons.
2. The 'Enter Imageview' option leaves the current 'Thumbanil View' - mode and enters the 'Single Image View'.



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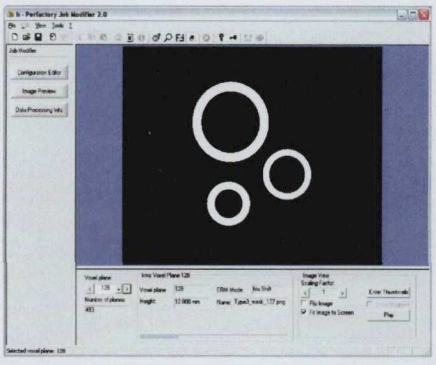
The 'Single Image View' Mode

The 'Single Image' view shows only the current selected bitmap but offers some additional tools.

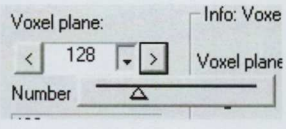
In this view the image can be fitted to the screen or scaled for easier viewing of image details.

It is also possible to show previous/next image by using the mouse wheel or the navigation buttons.

To leave this mode and enter the 'Thumbnail view' - mode press the 'Enter Thumbnail View' - button or make a doubleclick with the left mousebutton on the image.

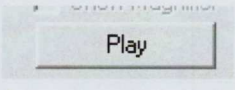


This view offers the following tools:

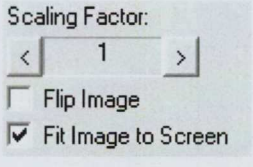


1. The 'Voxel plane' where you can enter the number of the plane that should be shown directly or you can increase/decrease the current number with the '>' and '<' - buttons. The popup-menu contains a slider bar that allows a fast and easy access to an image simply by moving the bar.
   Press and hold the '<' or '>' - button to scroll through all pictures automatically.

   To start and stop the automatically slide show press the 'Play' - button. You can scroll through the planes with the mouse wheel too!



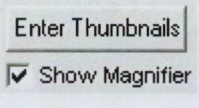
2. The 'Scaling factor' scales the image using the entered scaling factor. It can be used to zoom in to see details of the masks.



3. The 'Flip Image' option flips the image so that it is shown identical to the parts on the machine build platform instead of the mirror-inverted 'view' the projection system use.

4. 4. The 'Fit Image to screen' option scales the Image to fit the current view. This option disables the scaling factor feature!

5. The 'Show magnifier' option creates a magnifier rectangle by pressing and holding the left mousebutton. It is recommended to leave the 'magnifier mode' by unchecking the 'Show magnifier' checkbox before using another functions!

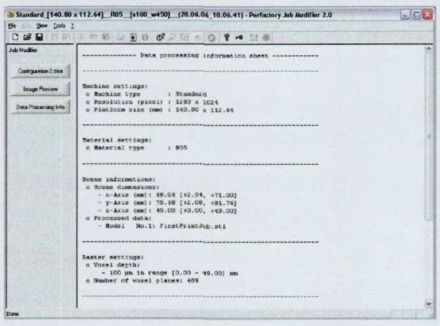


6. The 'Enter Thumbnails' option leaves the current 'Single Image View' mode and enters the 'Thumbnail View' mode.

Data Processing Info Viewer

The 'Data Processing Info' is similiar to a log file. It contains some general information like creation date, used Buildfilter, used parts, machine and scene settings etc. and a report log with errors/warnings that occured while jobfile generation.

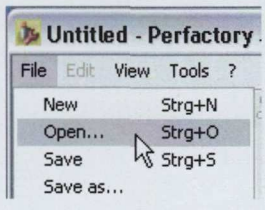
These informations are not editable.



How to Modify a Jobfile

The first step is to open the jobfile you want to modify. There are two ways to do this. The easiest one is to doubleclick on the jobfile. That will automatically load the jobfile.

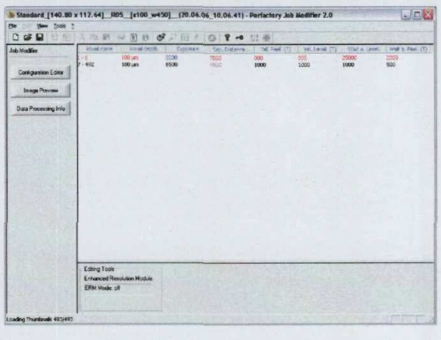
The standard way is to start the Perfactory Job Modifier (e.g. through the Perfactory StartCenter), and then to open the file using the menu option 'File->Open' or the corresponding toolbar button ( ).



A 'File open' - dialog appears. Select now the jobfile you want to modifiy and press open.

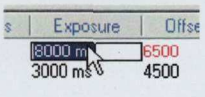
While opening the file will be analyzed. The analyzing status is shown through a progress bar and some text. Canceling this process will abort the jobfile configuration processing!

After opening the file, the 'Configuration Editor View' should be visible. If not, so select it by pressing the 'Configuration Editor' button (see left view).

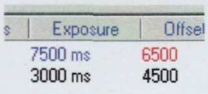


The table contains for every voxel plane one entry. All entries with identical values will be merged together. You will have two entries: One for the Burn-In range with long exposure and waiting times drawn in red color and one for the standard range drawn in a black color.

To e.g. modify the value for the Exposure time of the burn in range make a left mouse click on the table Entry 'Exposure' in the Row of the 'BurnIn Values'.



The value can be modified now be entering a valid number. To commit the new value, press 'Return' or click into another field. The value will be verified and drawn in blue if the value is correct and in pink if the entered value is invalid.



Currently no range checks are available. Please enter only appropriate values else the machine will not accept the jobfile or the job will not build correctly!

To apply the modifications to a jobfile you have to save it:

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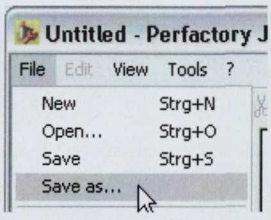
Press the 'Save' option in the 'File' menu or the corresponding toolbar - button (💾) if you want to overwrite the current file.

To create a new file, select the 'Save as...' option in the 'File' menu.

A 'Save as...' dialog will appear. Enter now a filename or select the file that should be overwritten and press 'Save'.

While saving a progress bar with status information is shown. Cancelling this process will abort saving of the jobfile and its modifications!

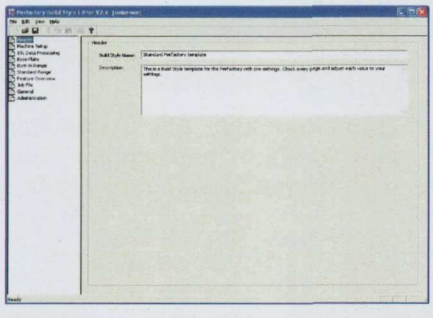
After successful saving a messagebox informs you. Now the jobfile is successfully modified and can be send to the machine using the Perfactory Direct software!



The new Perfactory RP additional bitmap generation features like 'Extra exposure for support structures' are not supported by the current version of the Perfactory Job Modifier!

2.7 Perfactory Buildstyle Editor

The Perfactory Buildstyle Editor enables you to modify Buildstyles by editing the building paramters, the Machine settings and the directory settings.



General Instruction

Please note that not all Buildstyle settings can be changed.

The following values cannot be modified:

- Average Voxel depth
- Standard and burn-in exposure times
- Material name.

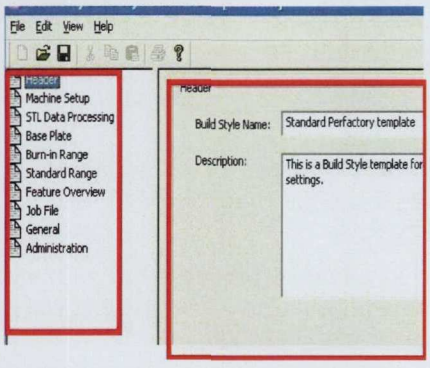
The Changes on the Buildstyles after the registration in Perfactory RP will be always applicable.

The Perfactory Buildstyle Editor offers the following functions at the Buildstyles:

1. Changing Machine Settings
2. Changing Network Settings
3. Changing Building Parameters
4. Changing Directory Settings

1. Open the Buildstyle which you want to edit

First press the 'Open' icon ( ) from the toolbar or select 'File > Open' from the menu. A dialog box appears where you can select the Buildstyle to be edited. The Buildstyle formats for Aureus is (.bsz).

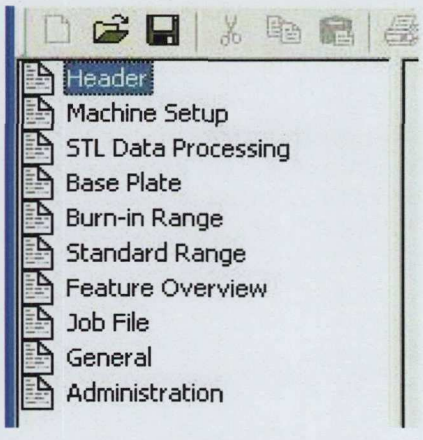


The Perfactory Buildstyle Editor window is divided into two boxes:

- The settings Menu, the left Margin box that contains a list of entries that allows you to edit the Settings sorted by their types e.g. Machine settings, STL data processing...

- The main box; where the content of every entry is shown by clicking on the entry line in the left box.

By clicking on the Settings Menu entry you can switch from settings to others.



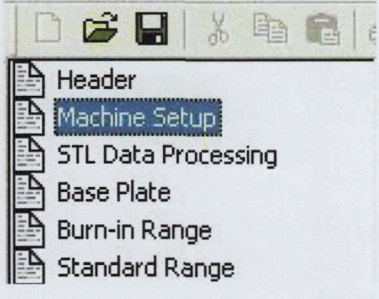
2. Settings

■ **Header**

The 'Header´shows the 'Buildstyle name´ and the 'Description´.

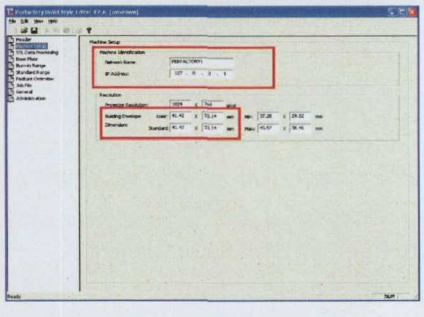
The ´Buildstyle Name´ will appear in the list of buildstyles when selecting the Buildstyle in 'New Platform´

The 'Description´box will appear when creating the 'New Platform´and contains information about the content and the features of the buildstyle.



■ **Machine Setup**

In 'Machine Setup´you can enter the Network Name and the IP address of your Aureus Machine.



In the Resolution Box you can view the Projector Resolution (pixels) which you should not modify as it is already set and does not change.

When you receive the Buildstyle, the Build envelope Dimension are adapted according to your Machine type and configuration.

In the case where modifications are required they can be entered in the Ùser´X and Y values, the Min and the Max values for X & Y dimensions should be respected.

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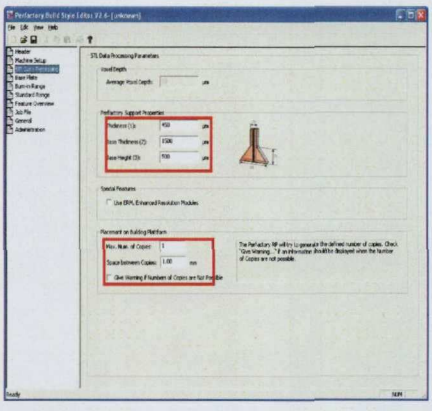
■ STL Data Processing

In the 'STL Data Processing ' you can edit the STL Data Processing Parameters such as the Voxel Depth, the support properties, the ERM Module and the placement on the Platform.

The Voxel Depth will be seen but can not be modified. A Buildstyle corresponds to a specific Voxel Depth. If you want to build with a different Voxel depth you need to select the correct Buildstyle.



In the 'Perfactory Support Settings Box ' you can enter the widening of Support structure created with Magics Envisiontec Software.

The Aureus Machine has no ERM Module installed, the 'Use ERM ' should not be checked in 'Special Features ' box.

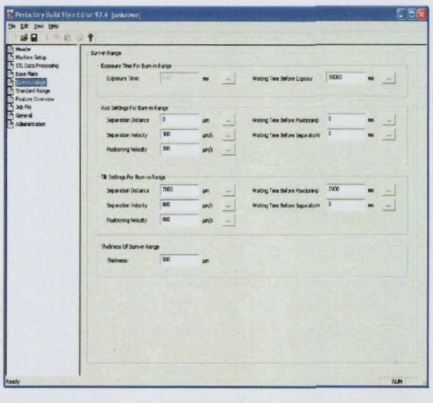
In 'Placement on Building Platform ' you can type in 'Max. Num. of copies ' the number of copies of your scene in case you want your Machine to build you more than one copy.

By checking the 'Give warning... ' you will receive a message when generating the jobs in Perfactory RP if the dimensions of the Scene doesnot allow the software to create copies on the Platform.

■ Base Plate

In 'Base Plate ' you can select to build the jobs with base plate or without base plate by checking the 'Generate Base Plate.

If you have checked the 'Generate Base Plate ' you can enter the thickiness of the Base Plate and the Perforation style and dimensions.



■ Burn-in Range

In 'Burn-in Range ' you can enter the building parameters at the burn-in range except for the Exposure Time which will not be shown.

In 'Burn-in Range ' you can also enter the thickness of Burn-in Range.

■ Standard Range

In 'Standard Range ' you can enter the building parameters at the standard range except for the Exposure Time which will not be shown.

In 'Burn-in Range ' you can also enter the thickness of Burn-in Range.

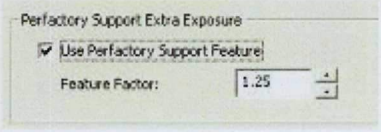
The Building parameters are already setup when you receive the Buildstyle according to the Material and Machine configuration, it is not recommended to modify the building parameters without the advise of the support team at Envisiontec.

■ Feature Overview

The features are special building paramters for very small geometries and structures such as the support structures and the very small details on the parts.

In 'Feature Overview´you can enable the feature that the resin or the parts geometry requires.

- The 'Perfactory Support Extra Exposure´will extend the exposure time for the support structure, generated in Magics Envisiontec Software, in order to harden them more. This feature is enabled by checking 'Use Perfactory Support Feature´, the extended exposure time is adjusted in 'Feature Factor´ by pressin on the up and down buttons at the right side of the value box.



- The 'Small Area Extra Exposure´ and the 'Small Structure Exposure´will extend the exposure time of small areas and structures in order to improve the accuracy of the small details.

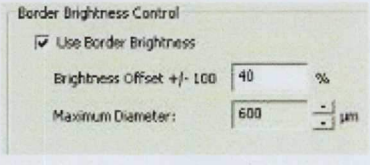
Theses features are enabled by checking 'Use Small Area Feature´ or 'Use Small Structure Feature´ respectively, the extended exposure time is adjusted in 'Feature Factor´ by pressin on the up and down buttons at the right side of the value box.

In Maximum Diameter you can select for which Areas and structures dimensions will this feature be applicable.

- The 'Border Brightness Control´can be used to improve the accuracy of the parts by increasing or decreasing the brightness of the border pixels of some structures.

The modification in percentage on the brightness of the border pixels can be typed in 'Brightness Offset +/- 100´.

The dimensions of the concerned structures are selected in Maximum Diameter box by pressing the up and down buttons to change the value. The feature will be applicable on structures which have a diameter smaller then the value in the 'Maximum diameter´.



■ Job File

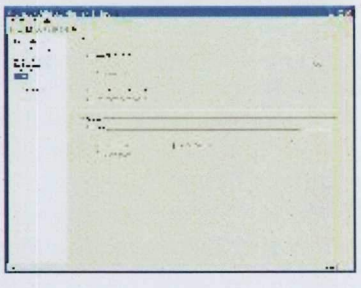
Directory Settings

All directory settings are made in 'Job File´. In this entry we can select the destination of the Job File after the job generation process is finished.

If you check the 'Save Job to Archive´the job file will be automatically saved.

In 'Path´ you can enter the directory where the Job file will be saved click on 'Browse´ ot type in the path.

If you have selected to save the parts data to one archive folder by checking 'Save Parts to Archive´in the 'Part Data´box then you will be able to check



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'Use Part's Archive´as a path and the Job file will be saved at the same directory where the Parts data are saved.

By checking 'Offer job saving before creation´the Job files will not be saved automatically instead you will have a dialog window asking you if you want to save the Job file when building the parts in Perfactory RP..

Sending Job file to Machine

The Job File is normally sent to the Machine with IP address entered in 'Machine Setup´.

When the 'Save Job to Archive´is checked, the 'Don't transfer job to machine´can be enabled. In this case the Job will be saved in the selected Directory and will not be sent to the Machine.

■ **General**

In 'General´you can find but not change:

- Material Name
- Average Voxel Depth
- Light Energie
- Type of light(Visible or UV.

.

3. Save Buildstyle

To save the buildstyle press the 'Save' icon (💾) from the toolbar or select 'File > Save' from the menu.

!

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Tutorials, Troubleshooting, Maintenance

This part of the dokumentation is dealing with tutorials and helps you with a troubleshooting guide. Some activities for maintenance are also included.

3.1 How to Generate Support Structures

This tutorial is a short guide on how to create support structures for a model with Magics envisionTEC.

Introduction

Magics envisionTEC contains a module to generate support structures. You can use this support structures directly on the Perfactory machines.

With this module you can generate support structures for a single opened .stl model file.

The quality of the automatic generated supports depends on the used parameters. There are some presets which are adjustable for your requirements. If you want to make some adjustments please have a look in the manual from Magics (see chapter 6: 'The Support generation module'; 'Automatic Support Generation' and chapter 5: 'General Information'; 'Machine Setup'.

The steps to generate a supportfile are:

3.1.1 Loading a Model to Support (Load Part)

First start the Magics software to load a model.
Simply double-click the Magics icon on your desktop to start the software. The icon looks like the picture in the right column. The name of the programm can differ (e.g. another version number).

1. Load your .stl file you want to support
2. Check and verify the surface of the model
3. Check and verify the orientation of the model
4. Check and verify the position of the model
5. Generate supports and change to the SG Module
6. Save the support structures in the SG module
7. Leave the SG module
8. Unload the current opened File

Menü: File ⌙ Import Part...

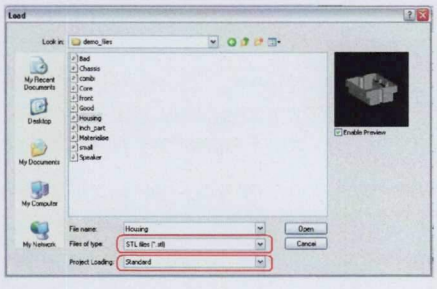
Hotkey: Ctrl+L

Toolbar:

This command allows you choosing a model by the filename and loading it into the magics platform. It is possible to process the model even if you haven't selected a platform. You can open .stl and .mgx files.

If you wish a file preview simply activate the checkbox 'Preview' and select a file to view.

Select the filename of the part you wish to support and press the button 'Open'.



3.1.2 Check and Verify the Surface of the Model

Menü: Tools ⌙ Fix Wizard...

Hotkey: Ctrl + F

Toolbar: (2nd toolbar: 'Tools')

You can analyze the quality of the model surface with the following commands:

Open the 'Fix Wizard', select 'Full analysis' and press the 'Update' button to start the error analysis.

NOTE: For large parts it is useful to disable overlapping and intersecting triangle check until all other problems are fixed!
For support generation the surface of the model must not have some errors on it. The values for '# Bad Edges' and '# Bad Contours' should be zero!

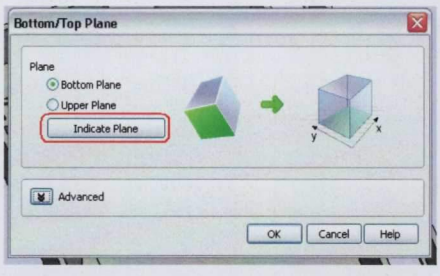
If the model has bad edges or bad contours you have to repair them. For explanation how to repair a model surface please take a look in the magics manual (see Chapter 5: 'General Information'; 'Fixing STL-files'). The values for '# Shells' should be one. That means the surface consists only of one element shell.
If the value for '# Shells' is 'not available' then you have to press the button 'Update' to recalculate the information.

If the model has more than one shell it consists of several surfaces. In this case you have to merge the surfaces with the 'Unify' function. For further information have a look in the magics manual (see Chapter 5: 'General Information; 'Unify').

3.1.3 Check and Verify the Model Orientation

Menü: Tools ⌙ RP functionality ⌙ Bottom/Top plane...

Hotkey: -
Toolbar: (2nd toolbar: 'RP functionality')



This option allows you to select a plane on your model and place it parallel to the xY-Plane (building platform).

You have to select the triangle face on you model that should be aligned as 'Bottom Plane' to the building plate. So first select the option 'Bottom Plane'.

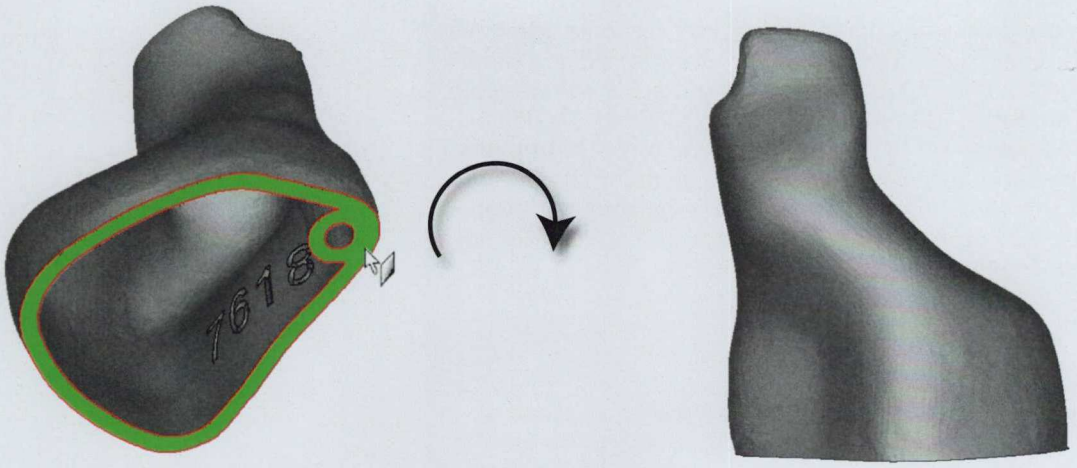
Then press the button 'Indicate Plane', to activate the cursor for the plane selection.

Now select the triangle you wish as bottom plane with a mouse click. The selected triangle and some more triangle which are within the defined tolerance will be highlighted (green).

If you have selected the plane you wish, simply press the 'OK' button to perform the alignment to the building platform.

3.1.4 Check and Verify the Model Position

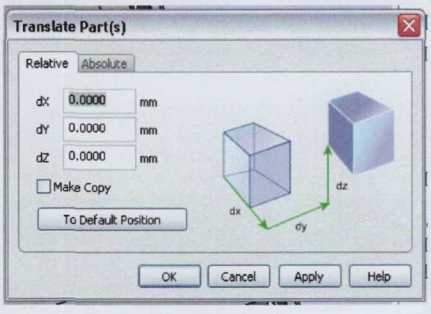
Menü: Tools ⌙ Translate...



Hotkey: -

Toolbar: (2nd toolbar: 'Tools')

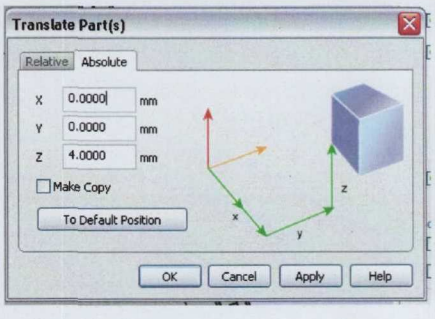
To generate a valid support structure you have to place the part in a defined distance to the building platform. With the following function you can translate your part in x,y and z - direction.



You have to define the define the values for the translation in x,y and z - direction. 'Relative' Translation allows you to move the parts by the values you have set. 'Absolute translation' move the part to a position you have set. To make a placement for support generation choose 'Absolut placement'.

The values 'min X' and 'min Y' should be 0 mm. Now the part will be translated to the left/bottom corner of the building platform.

The value 'min Z' is important because it defines the distance beetwen the building platform and the model. This distance will be filled with supports while support generation. You should use 4mm as default value.



Confirm you Settings by pressing the button 'OK'. Now the model will be positioned at the given coordinates.

3.1.5 Generate Supports and Change to the SG Module

Menü: Modules ⌙ Support Generation ⌙ Generate Support...

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Hotkey: -

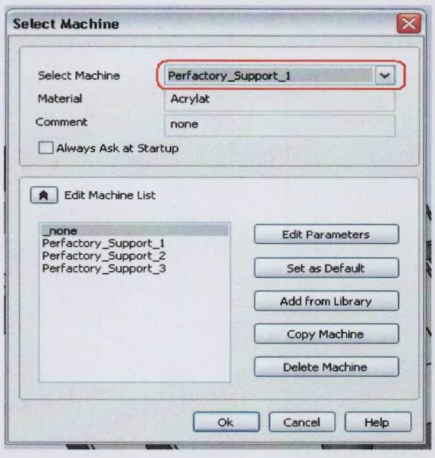
Toolbar: (2nd toolbar: 'Support')
With this command you can generate support structures in a fast and easy manner.

If you have changed the orientation and/or position of the model (step 3, step 4) and not saved this changes then you should do it now. Select 'Save part as' from the 'File' menu (or use the toolbar button) and save the part as stl part.

After selecting this funtion a dialog box to select support generation parameters appears.

You have to select the parameter set you wish to use for support generation (here: Perfactory_Support_1).

Press the button 'Set as Default' and this parameter set will be selected as default parameter set.

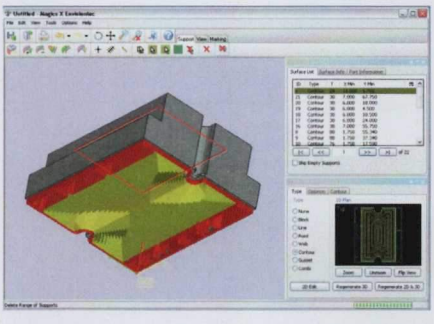


Now press the 'OK' - button to start the calculation of the support strucutures.

The result of the support generation will be shown in a new window (Magics SG - module).

This module allows you to change and adjust every single support. For detailled explanations take a look into the magics manual.

The following picture shows a support structure for a model in the Magics SG window:



3.1.6 Export Support Structures in the SG-Modul to stl File

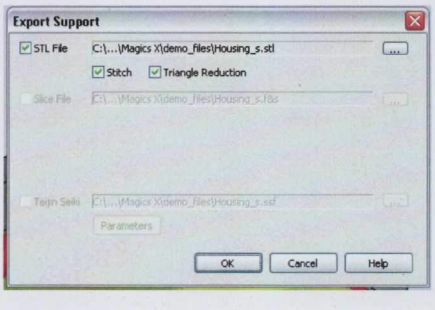
Menü: File └ Export Support...

Hotkey: -

Toolbar:

After generation you have to save the support structures into a file. The support structure gets the filename with an added '_s' (as support identifier) as default filename.

To do this choose the command
'File └ Export Support...' and press the 'OK' button:



NOTE: Ensure that the options 'Stitch' and 'Triangle reduction' are enabled. This will increase support quality and reduce the needed time to create a Buildjob in Perfactory RP

3.1.7 Leave the SG-Module

Menü: File └ Exit SG Module

Hotkey: -

Toolbar:

This commands leaves the SG module e.g. to generate a support for another model.

Until now the support was exported only as stl file. So a message box appears asking for saving the support structure.

3.1.8 Unload the Current Opened File

Menü: File ⌙ Unload Part...

Hotkey: Ctrl-U

Toolbar:

This command unloads the current used model. This step is required to load a new model for support generation.

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3.2 How to Generate Buildjobs

This tutorial is a short instruction how to create a building job by using Perfactory RP from the Perfactory Software Suite.

A building job will be generated in a few following steps.

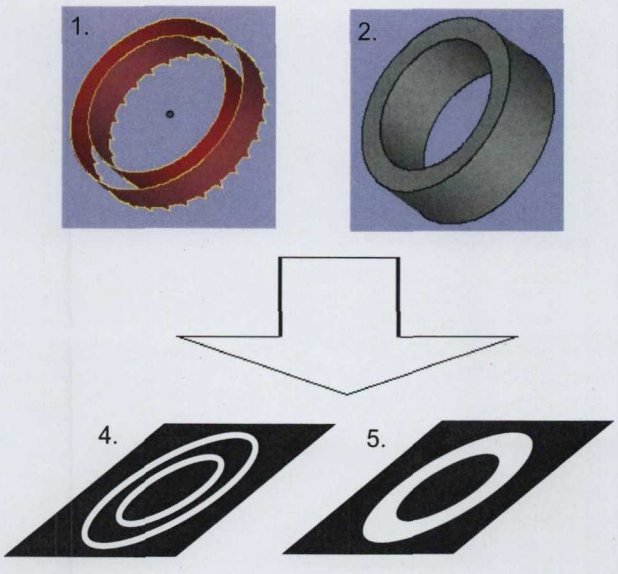
1. Loading all model and support data.
2. Selecting type of machine and material.
3. Placing the parts on the building platform.
4. Generating the Buildjob for the machine.
5. Building the job

3.2.1 General Information about Support Type and Model Type Data

Support parts (see fig. 1) or Model parts (see fig. 2) are completely different structures. The only difference is that support contours does not have 'inner' and 'outer' contours to be 'filled' while rendering.

'Support data' contours will be rendered as widened (using the given support thickness) lines (see fig. 4) instead of filling outer/inner contours that are not available in support data.

'Model data' contours will be rendered as 'filled areas' depending on their contour type, massive or hole (see fig. 5).



Support data file will be identified via filename: The first or last characters of a support file are 's_' or '_s':

- model name: shell.stl
- support name: s_shell.stl or shell_s.stl

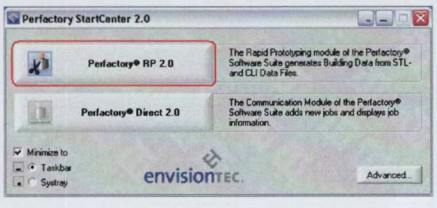
Avoid processing support type data as model data. Rendering support contour data as model data will result in filled lines of zero thickness. This mean, the support will not be generated!

This situation may happens if you merge non pre-widened supports structures (like fig. 1) with model structures(like fig. 2) together. When you try to build this combination then the renderer will only fill without widening. The result is a part without supports!

3.2.2 Loading all Model and Support Data

The first step for creating a building job is to start the 'Perfactory StartCenter'. Double-click on the Perfactory StartCenter icon placed at your desktop.

The Perfactory StartCenter window offers you some modules for preparing your data. Start the 'Perfactory RP' module with a mouse click on the 'Perfactory RP' button.


Perfactory StartCenter 2.0
Perfactory® RP 2.0
The Rapid Prototyping module of the Perfactory® Software Suite generates Building Data from STL- and CLI Data Files.
Perfactory® Direct 2.0
The Communication Module of the Perfactory® Software Suite adds new jobs and displays job information.
Minimize to
Taskbar
Systray
envisionTEC
Advanced...

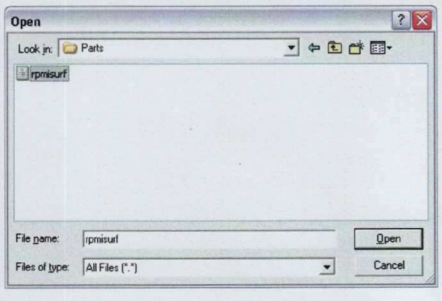
After starting Perfactory RP you can begin with your preparations to create a Buildjob.

Menü: File └ Open...

Hotkey: Strg+O

Icon:

This command allows you to open one or more parts into your scene by choosing the filename.



There are some ways to select multiple files in one step:

- Press and hold the left mouse button. Now a selection box appears which helps you to select the files you want.
- Press and hold the 'Ctrl' key. Now you can select and deselect files by simply click on the desired filenames. Press the 'Open' button to open the selected (highlighted) files. A dialog box apears showing some information and processing options. It is recommended not to change the default values so simply press the 'OK' button.

For a complete scene you need all models you want to build and all corresponding support data files. A support data file can be identificated via filename:
The last characters of a support file are '_s':
model name: shell.stl
support name: shell_s.stl

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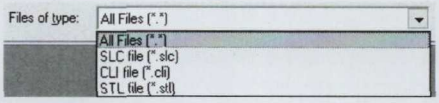
A click on the button ▾ offers you different file filters to set the type of displayed files.



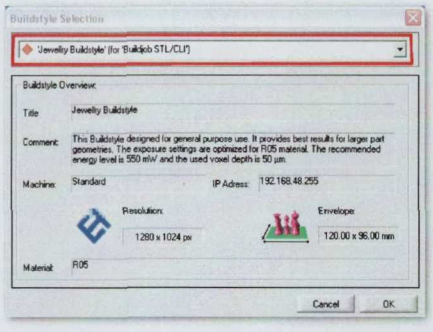
3.2.3 Selecting Type of Machine and Material

Menu: File └ Perfactory Settings

Hotkey: Ctrl+f

Toolbar:

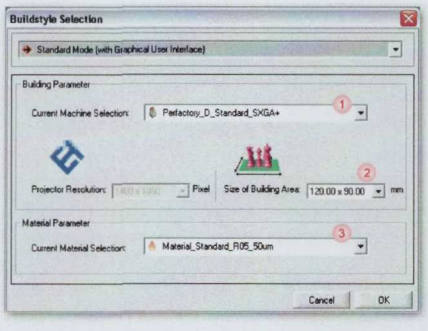
After all models and supports were loaded, the dialog box 'Buildstyle Selection' opens. You have the choice to select either a preconfigured Buildstyle, or adapt the Buildstyle parameter individual.



Select a preconfigured Buildstyle by selecting one of the Buildstyle entries of the marked pull down menu.

By selecting a preconfigured Buildstyle the values of all parameters, like Machine type, machine IP address, projector resolution, size of building area, material and voxel depth are attuned to one another and can not be changed. You can directly start with building a job.

Select 'Standard Mode (with Graphical User Interface)' to adapt individually the build parameters.



Open the pull down menu of 'Current Machine Selection' to get a list of available Perfactory machine and material types.

1. Choose the entry for your machine
2. Select the size of your building plate
3. Set the type of material you are using

The preconfigured Buildstyles already contain the IP address of the machine, for which the job is generated. In contrast to the Standard Mode Buildstyle, which contains only the machine type. If you have selected the standard mode, the IP address must be entered in the 'Perfactory Buildjob Preparing' dialog.

Standard Mode and preconfigured Buildstyles are not always selectable. The choice of the Buildstyles depend on the settings of the 'Buildfilter Administration' dialog.

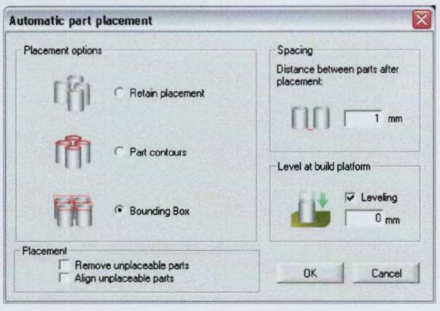
3.2.4 Placing the Parts on the Building Platform

Menü: Filter └ Automatic Placement...

Hotkey: -

Toolbar:

This Option enables you to make a fast arrangement of your parts on the building plate.



Select the type of placement at the option 'Placement options'. You can select between three types:

1.) *Retain Placement*. Selecting this option won't change the current arrangement.

2.) *Part contours*. Selecting this option will place the parts according their contours. This option will produce the most compact placement results.

3.) *Bounding Box*. Selecting this option will place the parts according their bounding rectangle.

At the option 'Spacing' enter the distance of the parts to each other in mm(here 1.0 mm).

Use the option 'Level at building platform' to level parts that are over or below the building platform.

Press the 'OK' button to confirm your selection and start the placement.

It is strongly recommended to enable leveling at zero to make sure that every part is properly positioned on the build platform.

Select the type of handling unplaceable parts at the option 'Placement'. You can select either 'Remove unplaceable parts' to remove unplaceable parts from the scene or 'Align unplaceable parts' to align all unplaceable parts outside around the build platform. Don't choose any of these options if unplaceable parts shouldn't processed.

The option'Align unplaceable parts' allows an easy manual 'post placement' because all unplaceable parts will be arranged around the build platform for easy manual access.

3.2.5 Generating the Buildjob for the Machine

Menü: File └ Build...

Hotkey: Strg-B

Toolbar:

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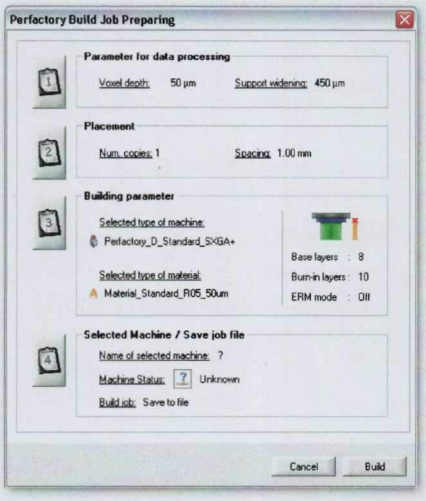
The building parameters are only available, if you have selected the standard mode in the Buildstyle selection dialog. Using this command you can create a Buildjob in a fast and easy manner.

This 'Buildjob Preparing' dialog can process triangle data (*.stl) as well as sliced data (*.cli or *.slc).

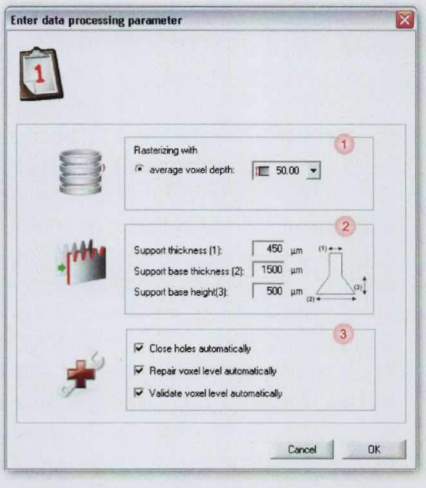
After pressing the build button, the 'Perfactory Buildjob Preparing' dialog opens.

If the button 'Build' is disabled, you have to set some settings. Press every of the red flashing buttons to make all needed settings.



Before you press the button 'Build', be sure that every settings like voxel depth, support thickness or exposure parameters are correct.

After selecting button '1', the 'Enter data processing parameter' dialog opens.



1.) First select the voxel depth for your parts you want to build, by choosing one of the pull down menu entries.

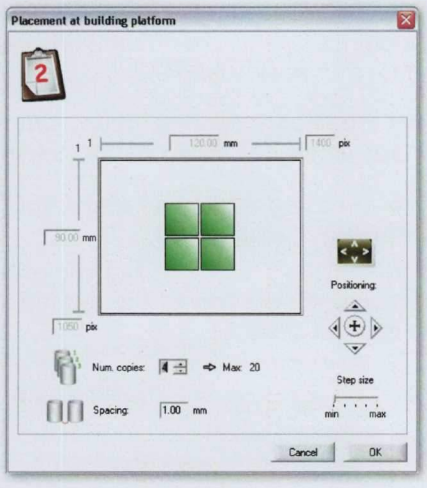
2.) The second block allows you to set the support thickness and height. This option is only available for data of support type.

3.) The first value, 'Support thickness (1)', defines the general thickness of a support structure. With the parameter 'Support base thickness' and height, (2) and (3), you can enlarge the joint face of the support to the base plate, so that this connection get more stable. The support base thickness (2) is reduced to the general thickness (1) within the given height (3). See the picture beside the parameters.

The third block gives you the ability for automatically correction of invalid data. It is highly recommended to enable these options.

If you merge support type data with model type data manually, please make sure that the support lines are widened (to hulls) before merging. If not, the supports will not be rendered correctly, because the merged result will be handled as 'model type data' and model type data will not be widened.

After selecting button '2', the 'Placement at building platform' dialog opens.

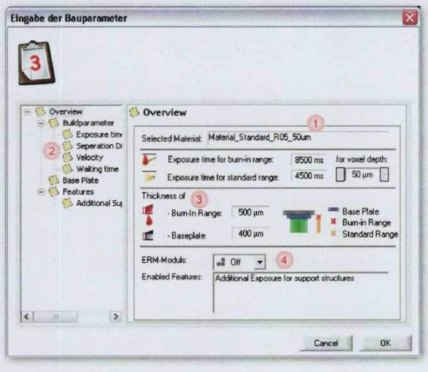


The option 'Num. copies:' allows you to make copies of your scene. The 'Max:' value tells you the maximum number of copies that are possible.

Enter the distance between the scene copies in the edit field 'Spacing'. A bigger distance can reduce the number of copies you can build.

Positioning: With the cursor (arrow) icon you can shift the scene on the building platform. Use the cross icon to centre the scene on the building platform.

After selecting button '3', the 'Enter building parameter' dialog opens.



The building parameters are organised in a tree view, where the root item gives you an overview about the most imported parameters.

1. If you want to choose a different material, than proceed with 'Build parameter' tree node. Make sure you select a material with the same voxel depth as defined in 'Enter data processing parameters', otherwise the e.g. exposure time parameters are incorrect!

2. The parameters of the next four intended paragraphs are set to well proven factory settings and taken out of the material file belonging to the selected material. There is no need to change these settings, unless you are aware of the effects.
   The displayed exposure times of the next block are well proven factory settings taken out of the file belonging to the selected material. Change this settings only if you are aware of the effects. To change them, go to 'Exposure time' tree node.

This function only works for a certain energy level, listed on the material bottle.

The Separation Distance settings are well proven factory settings taken out of the file belonging to the selected material. Change this settings only if you are aware of the effects. To change them, go to 'Separation Distance' tree node.

The Velocity settings are well proven factory settings taken out of the file belonging to the selected material. Change this settings only if you are aware of the effects. To change them, go to 'Velocity' tree node.

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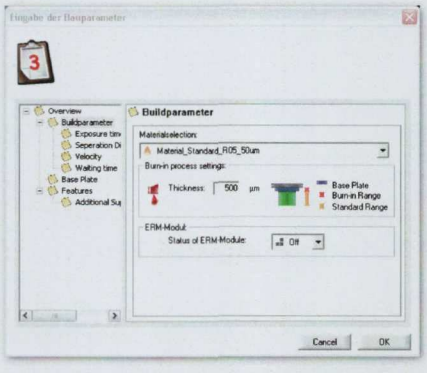
The Waiting time settings are well proven factory settings taken out of the file belonging to the selected. Change this settings only if you are aware of the effects. To change them, go to 'Waiting Time' tree node.

3. In the third block you can change the stability of the base plate. To do this, go to the 'Base Plate' tree node and change its thickness. For adapting the value of the 'Burn-In Range' thickness, go to 'Build parameters', but keep the following rules of thumb in mind
   - Burn-In Range thickness > 1.5 to 2.0 * base plate thickness
   - 300 µm < base plate thickness < 500 µm
4. In the last block you can turn on/off the Enhanced Resolution Mode, ERM. by selecting 'ON'/'OFF' from the ERM-Modules pull down menu. You can also see the list of enabled features. The enabled features depend on the Perfactory RP license.

The 'Build Parameters' tree node let you choose a material, the burn in thickness and turn ERM On/Off.



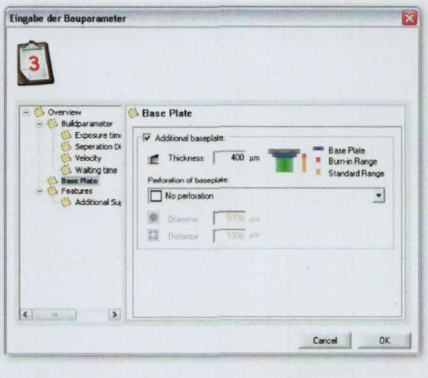
'Material selection' gives you the possibility to select a different material out of the possible materials defined for the previous selected optic.

Important: Pay attention to take the material with the correct voxel depth, defined in 'Enter data processing parameters', otherwise the parameter may be incorrect! After the material selection you can adjust the thickness of the Burn-In Range.

Keep in mind that the base plate is part of the Burn-In Range. That means, if you have e.g. a 400µm base plate and a burn in range of 600µm, than only the first 200µm of your part will be exposed using 'Burn-in' parameters!

The last step for this node is to turn on/off the Enhanced Resolution Mode module, 'ERM-Module'. Turn this option on, only if the machine is capable of ERM.

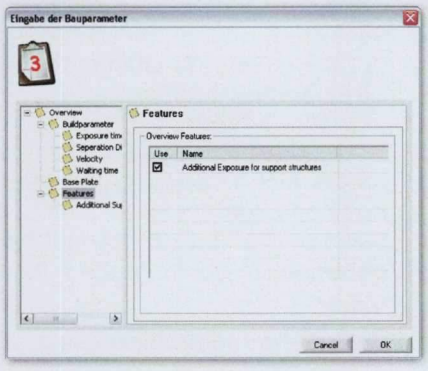
The 'Base Plate' tree node let you configure the thickness and perforation of the base plate.



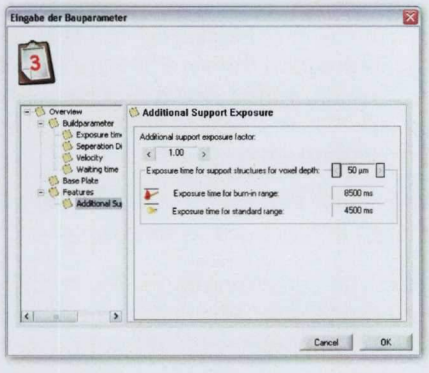
To create a base plate enable 'Generate base plate' checkbox and set its thickness. A value of 400µm is recommended. Apart from the standard solid base plate, you can choose from different perforated types. These perforated base plates allow easier cleaning of the whole Buildjob and decrease resin consumption.

The 'Features' tree node let you configure the activated features.

An overview of all available features are displayed in the table. To use a feature enable its checkbox. To configure the feature parameters go to its tree view node.



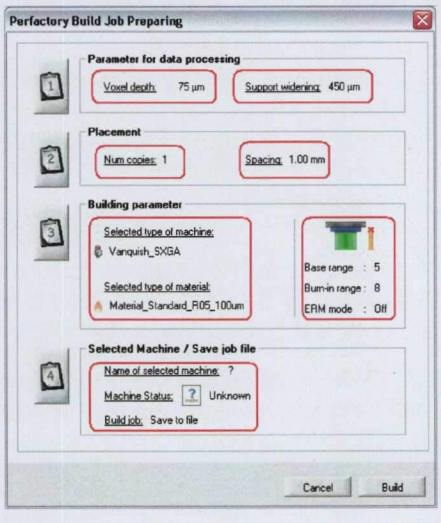
The 'Additional Support Exposure' tree node let you adjust the additional exposure times only for supports. For some materials like Pic100, an extra expose for support structures may be needed. An extra expose does also produce more stable support structures. This feature gives you the possibility to get extra exposure times by increasing the 'Additional support'.



3.2.6 Building the Job

After you have made your settings please check all settings in the overview (see marked areas).

When no button is flashing and all settings are as expected you can press the 'Build' - button to start the data processing and Buildjob generation. The scene will be processed to a job file. This jobfile will be send to the machine and/or saved to your hard disk (according to your settings in dialog 4).



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3.3 Troubleshooting Guide

This Troubleshooting Guide gives attention to some main problems that might happen with the Perfactory system.

3.3.1 Software Solutions

The following questions and solutions are regarding the Perfactory Software.

The Computer with the Perfactory Direct software module cannot connect to the Perfactory machine via Ethernet.

Software (Situation Code: s.1)

Solution

1. Look at you network parameters of your PC/network IP address of the Perfactory should only differ in the last digit. Make sure that the selected IP adress is ONLY for the Perfactory and no other computer in the network has the same. Also, both IP addresses are using the exact gateway submask (ie: 255.255.255.0). The subnet mask numbers should match exactly.

2. Ensure you are using the correct cable to connect the machine:
   - Use at least a type Cat 5 cable which is double screened.
   - Check that you are using a cross over cable if it is a direct connection between the computer and the Perfactory, or a patch network cable if the Perfactory is on a network.
   - The cable length should be smaller than 10m.

3. Check to make sure that the correct cable use is not defective and fully snaps into the sokket at the computer and the Perfactory PC.

4. Try to use the ping command to see the Perfactory machine from the Pre-processing computer:
   - Go to 'Start' at you windows system (Bottom lefthand corner)
   - Select 'programs'
   - Select 'accessories'
   - Select 'command prompt'
   - In the text box type the following at the prompt 'ping <ip address of Perfactory machine>'
   - After entering the command the PC will try and contact the machine directly. If the response is 'destination host unreachable' the test has failed. A positive response will result in the following text appearing 'reply from <ip address>: Bytes=32'

5. Make sure that you rebooted the Perfactory or the pre-processing computer after you entered a new IP address or a Submask for the changes to take effect.

The Perfactory machine is connected to the PC under 'Perfactory Direct' , but when we 'add job', I can see the job on Perfactory Direct, but when I push the orange start button on the machine keypad, the message 'NO JOB FOUND' appears.

Software (Situation Code: s.2)

Solution
Go to Network settings. Do not make any changes to the IP address or the submask. Push Enter when prompted to reboot the system, and try sending the job again.

3.3.2 Projection Unit

The following questions and solutions are regarding the Perfactory³ projection unit.

After installing a new light bulb the projector will not ignite.

ProjectionUnit(SituationCode:p.36)

Solution
Please check with envisionTEC that the projector has been updated with the new hardware to eliminate any ignition problems.

The projector runs for a few minutes then shutting down.

ProjectionUnit(SituationCode:p.37)

Solution
The projector is overheating. This is most likely to occur if the fan that is responsible for cooling the bulb fails. Please contact your local service provider to change the defective fan.

The projected image is only a diffuse round circle.

ProjectionUnit(SituationCode:p.38)

Solution

1. Check if the lens is assembled correctly at the projection unit.
2. Adjust the focus.

The projection system is running but the lamp will not ignite.

ProjectionUnit(SituationCode:p.39)

Solution

1. Check if the lamp is not or not correctly mounted.
2. Check if the lamp is defective.

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The lamp/image is flickering. ProjectionUnit(SituationCode:p.40)

Solution

1. Lamp is too old, install a new one.
2. Check the DVI cable.

Projected image is not sharp. ProjectionUnit(SituationCode:p.41)

Solution

1. Lens is not assembled correctly in the projection unit.
2. Focus ring is not installed properly.

3.3.3 Machine Handling

The following questions and solutions are regarding the Perfactory³ Machine.

Cannot turn on the machine. MachineHandling(Situat.Code:m.1)

Solution

1. Check if the main power fuse on the Perfactory is not defective (refer to section 3.4).
2. Check if the power cable is plugged correctly and is not defective.
3. Check the power supply.

3.3.4 Building Process

Parts will not stick at the building plate. Building Process (Situat.Code: b.1)

Solution

1. Check if the offset is set correctly. If not set the offset again.
2. Check that the polymer basement and the building plate are coplanar.
3. Check that the tilting mechanism is working properly (e.g. no resin on two front and two back screws).
4. Check that your exposure parameters and voxel depth correspond to each other.

5. Check that you are using the proper exposure time for the resin you are curing at the voxel depth you have chosen.
6. Check the material batch number and contact envisionTEC.
7. Check that the building plate is clean.
8. Check that the polymer basement is not damaged.
9. Check the machine power during the build to see if there is any variation in the power.

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3.4 Maintenance

Certain maintanance work can be accomplished by the machine´s operator. As a assumption the operator must be instructed to the machine by a competent person.

Caution! People could be injured!
Before maintaining or repairing you must always power-off the machine. Shut down the machine by pressing the [menu] button, select 'Shut Down System' and confirm with [enter]. After that pull off the power plug at the rear of the machine.

Changing the Fuse

The machine contains two fuses which are located close to the power connector at the rear of the machine. To change a fuse the black fuse holder simply must be plugged off (Fig. 12). Broken fuses must be replaced by fuses of the same specification.

Changing the projector bulb

The projecor bulb is changed by a few work steps.

Caution! People could be injured!
You can sustain heavy burns at you hands as the projector bulb gets very hot during operation. Hence let the machine cool down at least 30 minutes.

Please proceed as follows:

1. Open the front cover of the machine by screwing out the four slit screws (Fig. 2).
2. Lift the cover at the lower angle and pull it out downwards.
3. Screw off the two allen screws at the front of the mouting carriage and carefully pull out the carriage until it stops.
4. New screw off the slit screws at the grill of the projector bulb and pull out the bulb.
5. Push in the new projector bulb in the same way.
6. Srew in and tighten the slit scews again. That´s importent because thereby the projector bulb will be centered canonical. Don´t screw in the screws too strong.
7. Push the mouting carriage into the machine and tighten the screws.
8. Push the upper angle of the cover into the fitting and press the lower angle to the machine.
9. Screw in the cover screws.

Welcome to Magics X

Disclaimer

All information available in this Magics **envisionTEC** manual software is extracted directly from the standard Magics software manual authored by Materialise. Some features in this manual, although included, are not available to Perfactory users and cannot be implemented when used with the Perfactory machines. For further information, please contact **envisionTEC** GmbH.

The purpose of this program is to offer a user-friendly solution to all common and uncommon rapid prototyping problems. Magics X is a modular product. Magics X gives you full control over your rapid prototyping.
This is a customised version of Magics X for the company envisionTEC. It has a reduced set of functions. The Magics X envisionTEC license includes NO support from Materialise. Support will be done by envisionTEC.

Computer Aided Modeling Devices®

envisionTEC.

PERFACTORY®

Rapid Prototyping System

2. Getting started with

PERFACTORY® Software Suite and MAGICS Envisiontec®

Envisiontec GmbH
Elbestraße 10
D-45768 Marl
Germany
Phone:+49 2365 915460
Email:support@envisiontec.de

2.1 Disclaimer

This short instruction manual allows the new owner to quickly put the PERFACTORY® Software Suite and the Magics Envisiontec® Software into operation and explains the data preparationn and the build job generation.

The contents of this documentation is meant to provide people such as industrial designers, technical draftsmen, dental laboratory technicians, architects and model-makers - people involved in the making of and working with models - with speedy information about using the PERFACTORY® Software Suite.

Please carefully read this short instruction manual. Keep this short instruction manual alongside your workstation for all eventualities.

Envisiontec[1] offers a one year limited warranty from date of Purchase unless longer warranty periods are required by Law in the country of installation. Envisiontec warranties that the PERFACTORY® System sold and all accessories with it are free from defects. Envisiontec's reponsibility is limited to repairs or replacement of defective parts at our discretion.

Envisiontec makes no warranties which extend beyond the descriptions contained in this Guide. The User assumes all risks and liability for results obtained by the user or implementation of the instructions described herein, weather used singly or in combination with other designs or products derived or resulting from the software licensed to the user by Envisiontec hereunder will not infringe the claims of domestic or foreign patents. Except for the negligence of Envisiontec, its agents, representatives or employees, user shall protect, indemnify and save harmless Envisiontec of and from any loss, cost, damage or expense arising from any claim that is in any way associated with the operation of the PERFACTORY® system as described in this guide. Envisiontec shall not be liable for any special or consequential damages.

Data presented in examples do not necessarily reflect the actual test results and should not be used as operating criteria.

1. Envisiontec does not accept any further warranty claims or modified warranty limitations.

2.2 Introduction

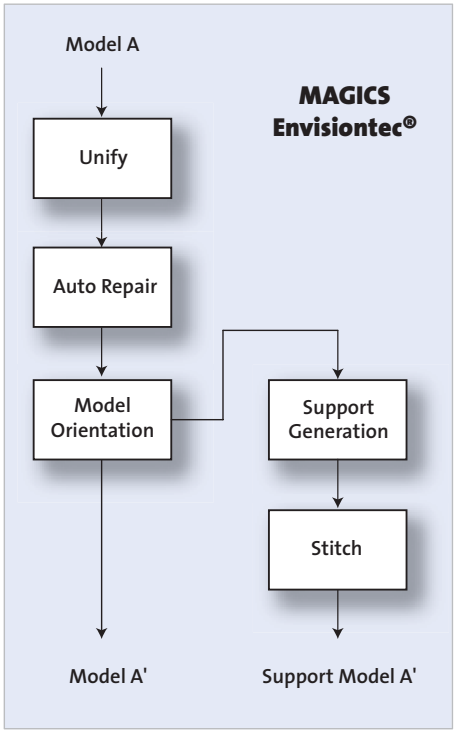
Envisiontec provides you two software packages to prepare the data for the PERFACTORY® system:

- MAGICS Envisiontec®
- PERFACTORY® Software Suite

Use MAGICS Envisiontec® for model preparation and support generation for every single model you want to build. Please read the MAGICS manual for a detailed description of all functions.

Use PERFACTORY® RP to place the prepared models and its supports on the building platform and to generate build jobs for the PERFACTORY® system.

2.2.1 Magics Envisiontec:



Use Magics Envisiontec® for data preparing and support generation:

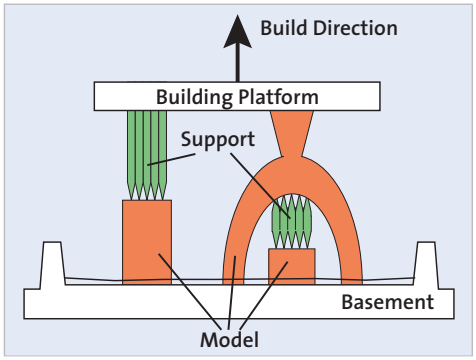
Since CAD systems don't always export clean STL files, correction may be needed before generation support:

- Use the Unify-operation to remove all self intersections automatically. This avoids that support structure intersects other model surfaces than the area to be supported.
- Use the Auto-repair-operation to repair flipped triangles, bad edges, gaps...

Check now if the model orientation is suitable for the building process. If not reorient the model.

Save the repaired and reoriented model and start the support generation - if necessary. Different parameter settings are available to automatically generate support structures. They were optimized for various model geometries (low volume models,high volume models and die-cast models).

You may edit the support structures generated by the support module by deleting those supports that you deem unnecessary based on your experience. For details on how to edit support structures generated by the support module Magics Envisiontec® please refer to the corresponding section in the user manual for this program.



The support structures necessary for a 3D model depends largely on its geometry. In order to select certain supports, you need experience coupled with detailed knowledge of the building process on the PERFACTORY® machine. The following gives you a short overview on what to take into account.

Support structures in the PERFACTORY® machine are necessary to be able to pull off solidified layer sections from the basement surface that are not connected to the building platform / main body.

Since those layer sections are not sufficiently connected to previously solidified layers they cannot be pulled off the basement surface together with the main body of the model.

For this reason support structures must have a certain minimum density and thickness. This in turn depends on the area of the cured section to be pulled off.

The accessibility of the support structures must be taken into account as they need to be removed later on.

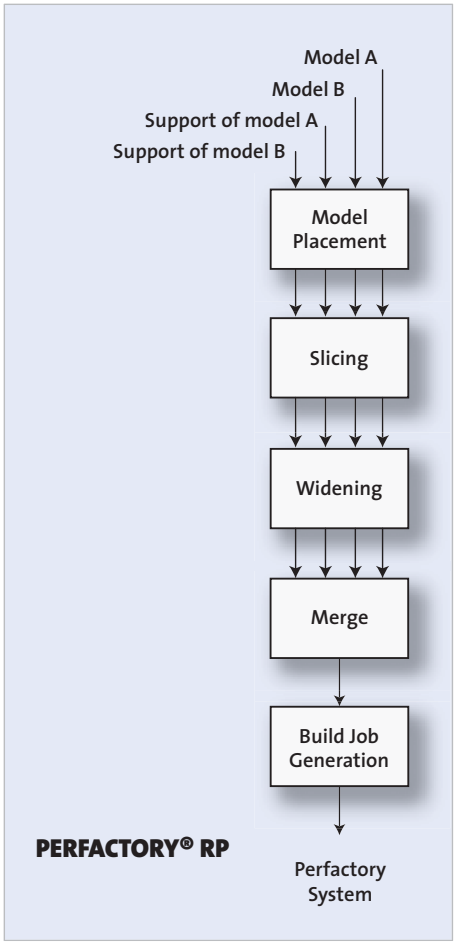
The number of necessary supports depends largely on the orientation of the 3D model. Consider this when selecting a suitable orientation for the 3D model.

Use the stitch operation to repair automatically bad edges created by the support generator. This will reduce the amount of memory and increase the slicing speed for data preparing.

Save the generated support into the stl-format.

Do that for every single model you want to build.

2.2.2 PERFACTORY® Software Suite



The different modules of the PERFACTORY® Software Suite will help you to administrate the different modules, to prepare a build job and send it to a PERFACTORY® machine.

The PERFACTORY® StartCenter allows you to launch the different modules of the Suite.

Use the module PERFACTORY® RP to group the repaired and re-orientated models and their corresponding supports on a virtual building platform.

After placing you can create a buildjob from the current scene for the PERFACTORY® machine and send it to that machine.

Use the module PERFACTORY® Direct to control the building process at an arbitrary PERFACTORY® machine.

Use the module PERFACTORY® Job Modifier to modify the building parameters of an existing build job file. This module is for advanced user only.

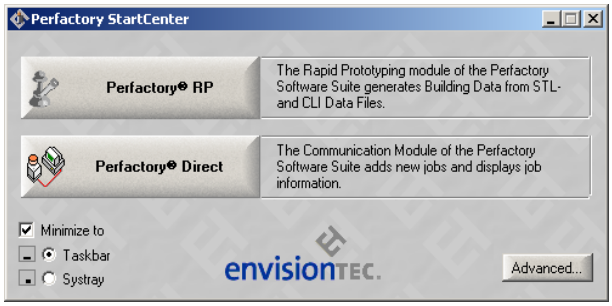
Use the module PERFACTORY®Parameter Editor o improve building accuracy and reduce material shrinkage effects by adapting the build platform. This module is for advanced user only.

2.3 PERFACTORY® StartCenter

2.3.1 Introduction

After installing the PERFACTORY® Software Suite an icon is placed at the desktop

A double click at this icon will start the PERFACTORY® StartCenter. With this program you have a direct access to the different software modules of the PERFACTORY® Software Suite.

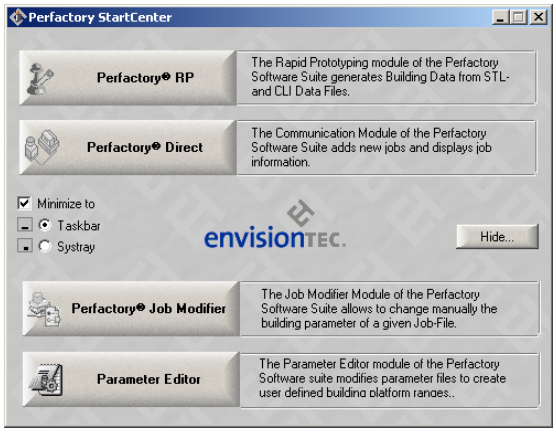

Perfactory StartCenter
Perfactory® RP
The Rapid Prototyping module of the Perfactory Software Suite generates Building Data from STL- and CLI Data Files.
Perfactory® Direct
The Communication Module of the Perfactory Software Suite adds new jobs and displays job information.
Minimize to
Taskbar
Systray
envisionTEC.
Advanced...

2.3.2 Direct access to PERFACTORY® modules

After launching PERFACTORY® StartCenter a dialog box appears. Four different modules of the PERFACTORY® Software Suite are available:

1 PERFACTORY® RP
2 PERFACTORY® Direct
3 PERFACTORY® Job Modifier
4 PERFACTORY® Job Creator

„Advanced“ button


Perfactory StartCenter
Perfactory® RP
The Rapid Prototyping module of the Perfactory Software Suite generates Building Data from STL- and CLI Data Files.
Perfactory® Direct
The Communication Module of the Perfactory Software Suite adds new jobs and displays job information.
Minimize to
Taskbar
Systray
envisionTEC.
Hide...
Perfactory® Job Modifier
The Job Modifier Module of the Perfactory Software Suite allows to change manually the building parameter of a given Job-File.
Parameter Editor
The Parameter Editor module of the Perfactory Software suite modifies parameter files to create user defined building platform ranges..

To see the last two modules press the advanced button at the lower right side of the dialog box.

2.3.3 Description of the four modules

Placing the 3D models at the building platform, slicing them into layered objects and generating of build jobs are some of the functions for data processing usable with the module PERFACTORY® RP.

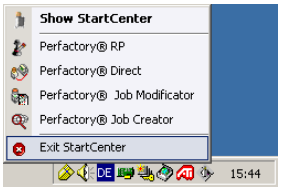
The module PERFACTORY® Direct is a printer like interface utility for the PERFACTORY® machine. The module displays the progress of and information about a building process.

The two modules PERFACTORY® Job Modifier and PERFACTORY® Parameter Editor are used to view, check and modifiy jobfiles resp. the Parameter Editor to adapt the platform ranges for your PERFACTORY® System.

2.3.4 The 'minimize' option

Select the option to minimize the window of the StartCenter to the task bar. Select the option to minimize the StartCenter to the systray. This will be done if the checkbox is enabled and if you have pressed one of the four buttons or the minimize button .

2.3.5 Close PERFACTORY® StartCenter

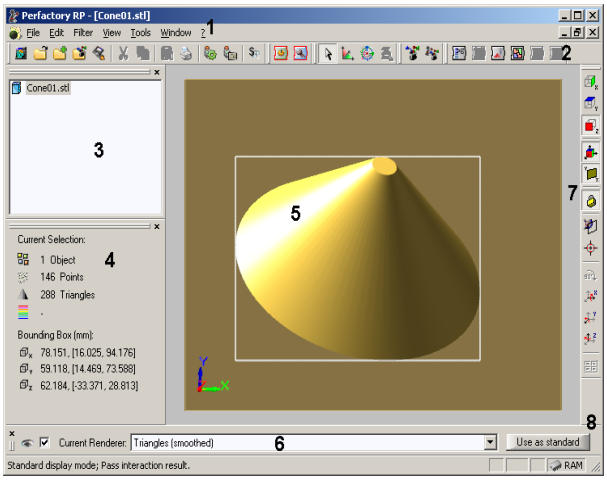


To close PERFACTORY® StartCenter click with the right mouse button at the task bar icon and select Exit StartCenter. A click at the button will close the window too.

2.4 PERFACTORY® RP - Overview

2.4.1 Introduction

Use the module PERFACTORY® RP for data-processing and for creation of build jobs for the PERFACTORY® system. The functionality of the user interface can be described as follows:



The user interface of the PERFACTORY® RP module are divided into eight different areas:

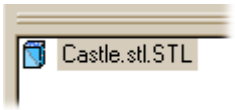
1. **Menu**
2. **Direct access toolbar**
3. **Explorer Window**
4. **Information Window**
5. **Rendering Area**
6. **Selection of a specific Renderer Mode**
7. **Toolbar for changing / modifying display properties**
8. **Memory management**

1. Menu

The menu bar gives acces to functions for loading, processing and saving parts. You find also entries for generate a build job, prepare the used PERFACTORY® machine and build your job.

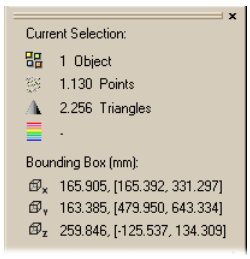
2. Direct access toolbar

The toolbar allows a direct access to functions of the different plug-ins without navigation through the menu.



3. Explorer Window

This window shows the names and different informations of all loaded objects. If you select a name the corresponding object will be marked at the rendering area and you can use data-processing operations. If the Shift or the Ctrl key is pressed during a selection more than one object can be selected.



4. Information Window

This window contains information of the current selection like number of points or triangles.

5. Rendering Area

This window shows the rendered object geometry.

6. Selection of a specific Renderer Mode

This windows allows you to select a rendering method which shows the data with diffenent level of detail. You can set the current renderer as default render by pressing the „Use as Standard“ button.

NOTE: The higher the level of detail the higher the used amount of RAM memory.

7. Toolbar for changing and modifying display properties

Changing point of view, reset to standard view, switching between parallel and perspective projection, switch on/off of displaying the building platform are some of the functions, which are available at this toolbar.

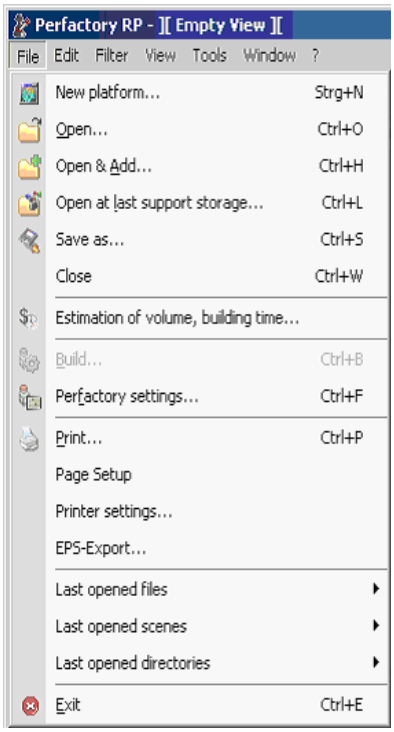
8. Memory management

You can select between two memory managements. The first is called 'RAM' and holds all data in the main memory. The second 'Swap' uses swap files. .

NOTE: Select the 'Swap' option if you process large data files or if you do not have enough RAM memory.

2.4.2 PERFACTORY® RP - Menu bar

The next chapter describes briefly the functions of the menu bar.



Menu: File

This menu contains all functions to open, save, print and build a scene:

New Platform

Icon:

Menu: File ¬ New Platform

Hotkey: Ctrl + N

Description: This command creates a new platform (see chapter 2.5.1).

Open...

Icon:

Menu: File ¬ Open...

Hotkey: Ctrl + O

Description: This command opens a dialogbox to load a data file (see chapter 2.5.2).

Open & Add...

Icon:

Menu: File ¬ Open & Add...

Hotkey: Ctrl + H

Description: This command opens a dialog box to load a data file which will be added to the current scene (see chapter 2.5.2).

Open at last support storage...

Icon:

Menu: File ¬ Open at last support storage...

Hotkey: Ctrl + L

Description: This command opens a dialog box to load a data file. The path where the last support files were saved will be used as default path (see chapter 2.5.2).

Save as...

Icon:

Menu: File ¬ Save as...

Hotkey: Ctrl + S

Description: This command opens a dialog box to save your data (see chapter 2.5.3).

Close

Icon: -

Menu: File ¬ Close

Hotkey: Ctrl + W

Description: This command closes the current scene.

Estimation of volume, building time...

Icon:

Menu: File ¬ Estimation of volume, building time...

Hotkey: -

Description: This command opens a dialog box to calculate the volume, the estimated building time and costs of the selected parts.

Build...

Icon:

Menu: File ¬ Build...

Hotkey: Ctrl + B

Description: This command opens a dialog box to preprocess your data for job file generation and starts the building process. (see chapter 2.5.5).

Perfactory Settings...

Icon:

Menu: File ¬ Perfactory Settings...

Hotkey: Ctrl + F

Description: This command opens a dialog box to change the current material and machine settings.

Print...

Icon:

Menu: File ¬ Print...

Hotkey: Ctrl + P

Description: This command opens a dialog box to print the current content of the rendering view.

Page setup

Icon: -

Menu: File ¬ Page setup

Hotkey: -

Description: This command opens a dialog box that-show a printing Preview.

Printer settings...

Icon: -

Menu: File ¬ Printer settings...

Hotkey: -

Description: This command opens a dialog box to select and setup your printer.

EPS Export...

Icon: -

Menu: File ¬ EPS Export...

Hotkey: -

Description: This command opens a dialog box to export a screenshot from the content of the rendering view as 2D EPS-Image.

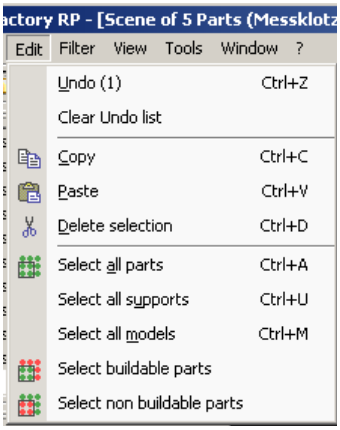
Exit

Icon:

Menu: File ¬ Exit

Hotkey: Ctrl + E

Description: This command closes the Perfactory RP software.



Menu: Edit

This menu contains some basic edit functions:

Undo (n)

Icon: -

Menu: Edit ¬ Undo

Hotkey: Ctrl + Z

Description: This command restores the last state.

Clear Undo List

Icon: -

Menu: Edit ¬ Clear Undo List

Hotkey: -

Description: This command clears the undo list.

Copy

Icon:

Menu: Edit ¬ Copy

Hotkey: Ctrl + C

Description: This command makes a copy of the selected parts to the clipboard

Paste

Icon:

Menu: Edit ¬ Paste

Hotkey: Ctrl + V

Description: This command pastes the parts from the clipboard to the scene.

Delete Selection

Icon:

Menu: Edit ¬ Delete Selection

Hotkey: Ctrl + D

Description: This command deletes the currently selected part(s).

Select All

Icon:

Menu: Edit ¬ Select all

Hotkey: Ctrl + A

Description: This command selects every loaded part.

Select all supports

Icon: -

Menu: Edit ¬ Select all supports

Hotkey: Ctrl + U

Description: This command selects all loaded support parts.

Select all models

Icon: -

Menu: Edit ¬ Select all models

Hotkey: Ctrl + M

Description: This command selects all loaded model parts.

Select all buildable parts

Icon:

Menu: Edit ¬ Select buildable parts

Hotkey: -

Description: This command selects all parts that completely placed inside the build platform.

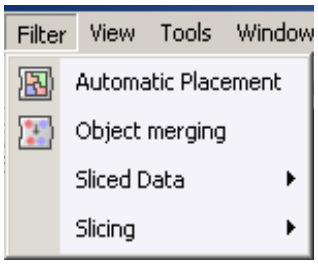
Select all non buildable parts

Icon:

Menu: Edit ¬ Select non buildable parts

Hotkey: -

Description: This command selects all parts that not completely placed inside the build platform.



Menu: Filter

This menu contains all filters for data processing:

Automatic Placement

Icon:

Menu: Filter ¬ Automatic Placement

Hotkey: -

Description: This command starts a filter to make an automatic placement (nesting) and levelling of all selected parts on the building platform. (see also chapter 2.5.4)

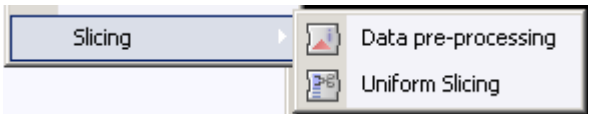
Object Merging

Icon:

Menu: Filter ¬ Object Merging

Hotkey: -

Description: This command is enabled if more then one file is loaded. It will merge these files to one. (see also chapter 2.5.10).



Menu: Filter ¬ Slicing

Data pre-processing

Icon:

Menu: Filter ¬ Slicing ¬ Data pre-processing

Hotkey: -

Description: This command pre-processes the data. (see also chapter 2.5.11).

Uniform slicing

Icon:

Menu: Filter - Slicing - Uniform slicing

Hotkey: -

Description: This command slice the stl data to layered data which is required for building. (see also chapter 2.5.12)

Menu: Filter ¬ Sliced Data

Repair

Icon:

Menu: Filter ¬ Sliced Data ¬ Repair

Hotkey: -

Description: This command starts a filter to repair damaged/invalid layer data.

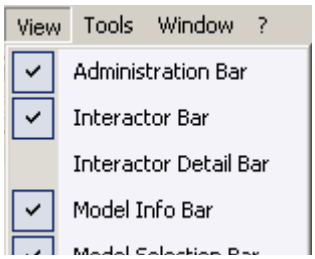
Widening

Icon:

Menu: Filter ¬ Sliced Data ¬ Widening

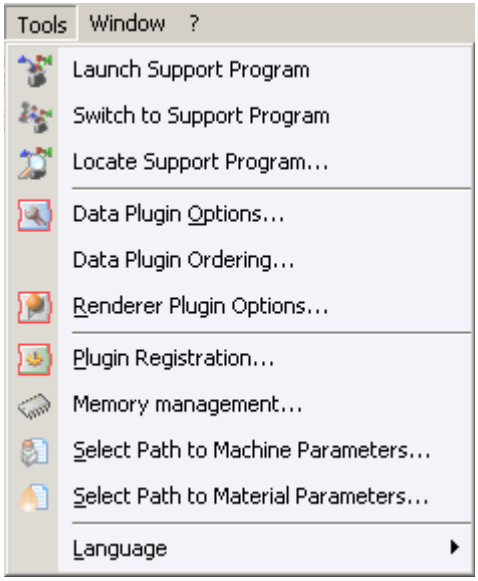
Hotkey:

Description: This command widens support data e.g. a line to a thin 2D-bar. This kind of supports are required for building on a Perfactory system. (see also chapter 2.5.13).



Menu: View

This menu contains an overview of all available toolbars. You can enable/disable a toolbar by clicking at the corresponding entry in this menu.



Menu: Tools

This menu contains access to tools like "Magics Envisiontec" and settings for language, paths and plugins.

Launch Support Program

Icon:

Menu: Tools ¬ Launch Support Program

Hotkey: -

Description: This command launches the external software for Support generation (Magics Envisiontec).

Switch to Support Program

Icon:

Menu: Tools ¬ Switch to Support Program

Hotkey: --

Description: This command switches to the external support software (Magics Envisiontec).

Locate Support Program...

Icon:

Menu: Tools ¬ Locate Support Program...

Hotkey: -

Description: This command sets the path to the external support software (Magics Envisiontec).

Data Plugin Options...

Icon:

Menu: Tools ¬ Data Plugin Options...

Hotkey: -

Description: This command opens a dialog box to edit the settings of the filter plugins.

Data Plugin Ordering...

Icon: -

Menu: Tools ¬ Data Plugin Ordering...

Hotkey: -

Description: This command opens a dialog box to change the (priority) order of the rendering plugins.

Renderer Plugin Options...

Icon:

Menu: Tools ¬ Renderer Plugin Options...

Hotkey: -

Description: This command opens a dialog box to change the (priority) order of the rendering plugins.

Plugin Registration...

Icon:

Menu: Tools ¬ Plugin Registration...

Hotkey: -

Description: This command opens a dialog box to search for plugins in a given directory and register them.

Memory management...

Icon:

Menu: Tools ¬ Memory management...

Hotkey: -

Description: This command opens a dialog to switch between using RAM or Swap File for data storage.

Select Path to Machine Parameter...

Icon:

Menu: Tools ¬ Select Path to machine Parameter...

Hotkey: -

Description: This command allows to set the path to the machine parameter files.

Select Path to Material Parameter...

Icon:

Menu: Tools ¬ Select Path to Material Parameter...

Hotkey: -

Description: This command allows you to set the path to the material parameter files.

Menu: Tools ¬ Language

Deutsch

Icon:

Menu: Tools ¬ Language ¬ Deutsch

Hotkey: -

Description: This command switches to the German language set.

English

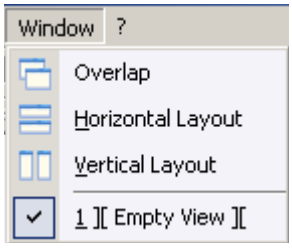
Icon:

Menu: Tools ¬ Language ¬ English

Hotkey: -

Description: This command switches to the English language set..

NOTE: After changing the language set you have to restart the software!



Menu: Window

This menu offers some kinds of window positioning and an overview of the opened scenes:

Overlap

Icon:

Menu: Window ¬ Overlap

Hotkey: -

Description: This command arranges the open rendering views that the foreground window overlaps the other.

Horizontal Layout

Icon:

Menu: Window ¬ Horizontal Layout

Hotkey: -

Description: This command arranges the open

Vertical Layout

Icon:

Menu: Window ¬ Vertical Layout

Hotkey: -

Description: This command arranges the open rendering views by positioning vertical.

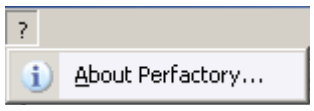
1][...][- n][...][

Icon: -

Menu: Window ¬ 1][...][- n][...][

Hotkey: -

Description: These are the open scenes. Selecting a scene with a mouse click will bring the window in the foreground.



Menu: ?

This menu is for help and information purpose.

About Perfactory

Icon:

Menu: ? ¬ About Perfactory

Hotkey: -

Description: This command opens the "About" dialog box with some credits and copyright information.

2.4.3 PERFACTORY® RP - Interactor toolbar

Use this toolbar to align and position your parts and to navigate through the layers of a sliced part.

NOTE: This toolbar exists only as a button bar.

Standard display mode

Icon:

Description: This command executes/finalises the other commands of this toolbar. Use every "non-Interactor" - function in this mode/with this tool only!

Re-alignment

Icon:

Description: With this tool you can align a triangle of a model to the building plate. After you have selected a triangle (with left-click) leave this tool by using the arrow - icon . Then the alignment will be executed (see also chapter 2.5.6).

Geometry transformations

Icon:

Description: With this tool you can move, rotate and scale your part. After you have made your transformations leave this tool by using the arrow - icon . Then the Transformation will be confirmed (see also chapter 2.5.7).

Layer Selection

Icon:

Description: With this tool you can navigate through every single layer of sliced data. This tool is only enabled if you have one single sliced part selected. Leave this tool with the arrow-icon (see also chapter 2.5.8).

NOTE: To leave the interaction mode you have to press the button for the standard display mode.

NOTE: The Geometry transformation mode can be fast and easy entered and leaved with a click on the middle mouse button too.

2.4.4 PERFACTORY® RP - The View bar

Use this toolbar to change viewing/selecting mode.. All functions don't change the data of a part.

View along x, y, z axis

Icon:

Description: These buttons allow you to align the camera view to the x,y or z - plane.

Switch on/off coordinate axis

Icon:

Description: This button shows/hides the coordinates axis.

Show/Hide building platform

Icon:

Description: This button shows/hides the building platform

Link model and support data

Icon:

Description: This button locks all selected models to their supports. If this function is enabled and you select a model, all corresponding supports will be selected too.

Ortho/Perspective projection

Icon:

Description: This button switches the view between the perspective and the orthogonal projection.

Standard view

Icon:

Description: This button resets the view to the standard view.

90° Rotation

Icon:

Description: This button rotates the view around the axis defined with one of the following toolbar buttons: .

Fix rotation to axis

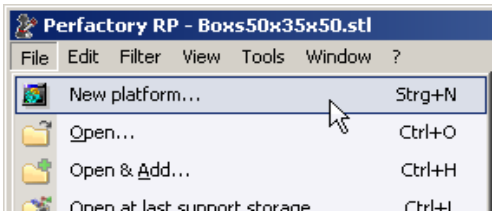
Icon:

Description: This buttons defines the axis for the rotation of the view (see previos explanation). To leave this rotation mode simply press the current selected button again.

2.5 PERFACTORY® RP - How-to manual

2.5.1 How to create a new platform

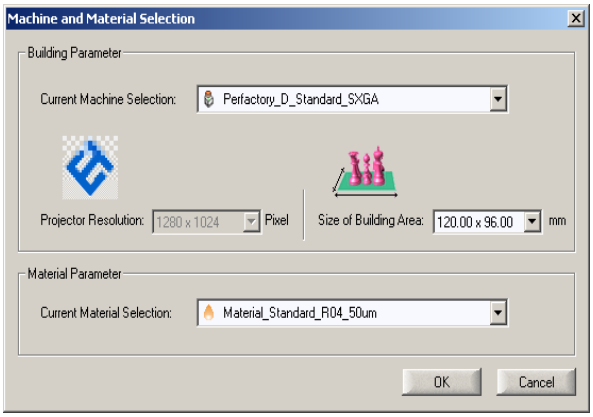
First press the Icon for "New platform" ( ) or select the menu entry "New Platform" .



Now a dialog box titled with "Machine and Material Selection" appears. It offers you two dropdown lists to change the type of the machine and material for this project.

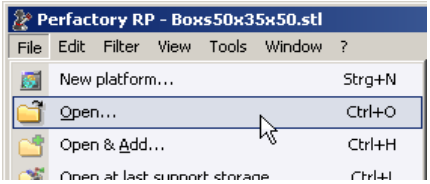
After you have made your selection, simply click on the "OK"-Button and the new platform will be created.

If you press "Cancel" the platform will be created too but you can't create a build job.



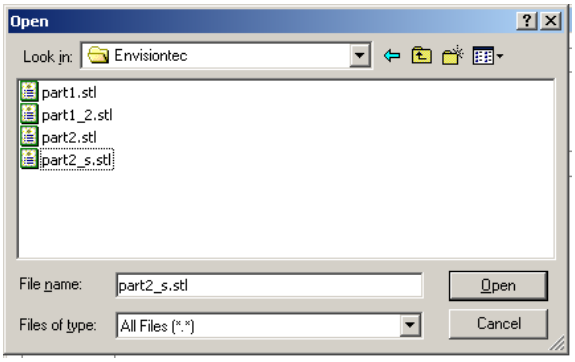
2.5.2 How to open a file

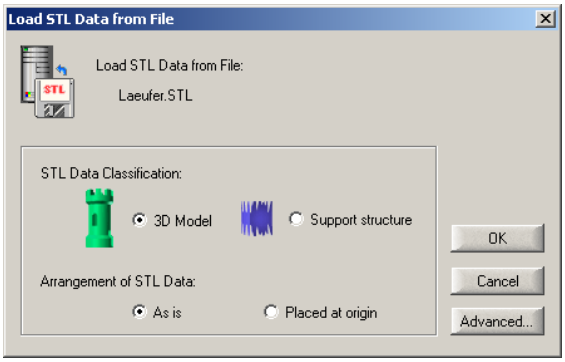
First press the Icon for "Open" ( ) or select the menu entry "Open".



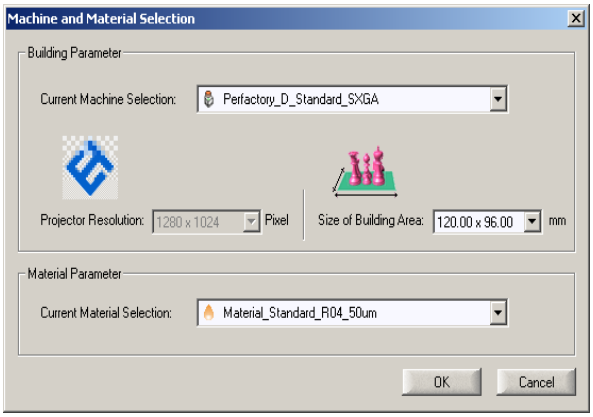
Now a File open dialog box appears. Supported file formats are .stl, .cli and .slc- files.

If you want to select several files at once press either the Shift key or the Ctrl key while selecting your files.





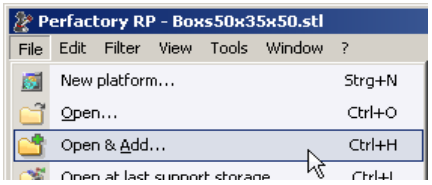
After you have selected your files press the Open-Button. A dialog box appears showing the type of the selected file and offering some options to manipulate the loading process. Press "OK" and the loading process starts.



After loading the parts a dialog box appears asking for the type of machine and material you wish to use.

Make your selection for your configuration and press the "OK" - Button. Now the opened scene will be visible in the main view.

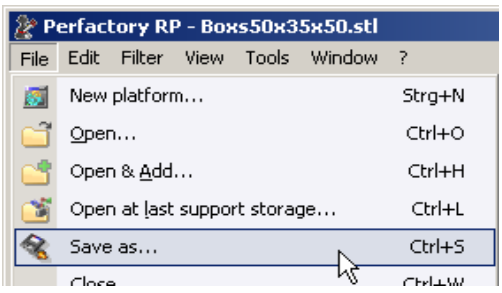
If you press "Cancel" instead of "OK" the scene will be opened too but you can't create a build job.



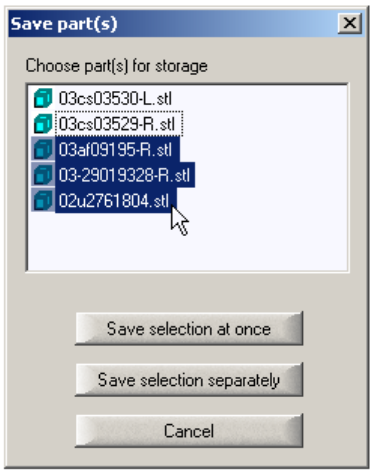
To add further 3D models and their supports to an existing scene press the Icon for "Open & Add" ( ) or select the menu entry "Open & Add" instead of "Open".

2.5.3 How to save a scene to a file:

Requirements: At least one open data file.



First press the Icon for "Save as" ( ) or select the menu entry "Save as".



A dialog box appears with a list containing the selected files. Now you can (un-)select the files you wish to save.

Use the button "Save selection separately" to save every file with his own settings/path etc..

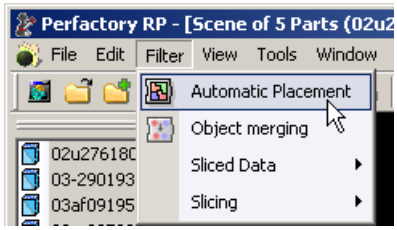
Use the button "Save selection at once" to save all parts with the same settings at one path. Supported file formats are .stl for 3D-data and .cli for layered data.

Press and hold the „Ctrl“ - key to select and unselect multiple files simply by making a mouse click on the filename.

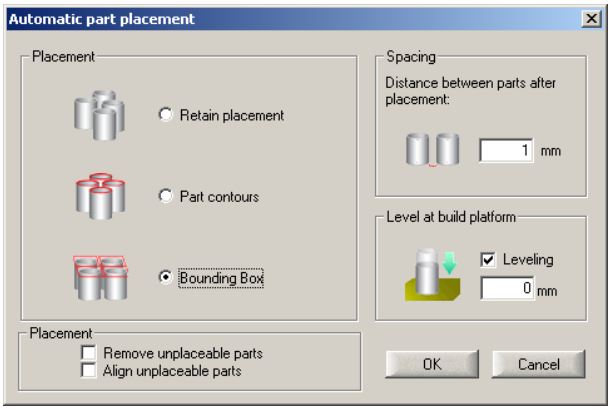
You can do similiar with the shift key and the selection rectangle that you get if you press and hold the left mouse button.

2.5.4 How to perform an "Automatic placement":

Requirements: At least two open data files.



First press the Icon for "Automatic Placement" ( ) or select the menu entry "Automatic placement".



A dialog box appears which offers three placement possibilities and four options.

The three placement possibilities are:

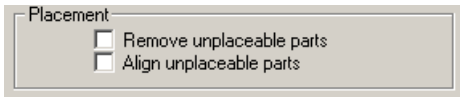
- Retain placement
- Part contours
- Bounding Box

"Retain placement" means that the current placement will not change. This option is useful if you want only level the parts to the building plate.

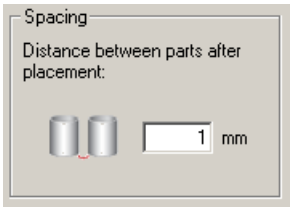
"Part contours" means that the parts will placed according there contours. This is the most compact placement method. This placement works only with .stl data files.

"Bounding Box" means that the parts will placed according there bounding rectangles (boxes). This placement method is not very tight but fast and allows in some cases more copies of the scene on the building plate.

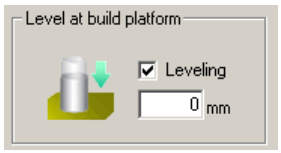
Additional Options:



For placement post-processing there can be used either „Remove unplaceable parts“ or „Align unplaceable parts“. The option „Remove unplaceable parts“ removes every parts from the build platform that cannot be placed automatically. Alternatively the option „Align unplaceable parts“ aligns the unplaceable parts side by side outside the build platform.



Further you can set a Spacing. That means every part will keep this spacing distance to other parts.



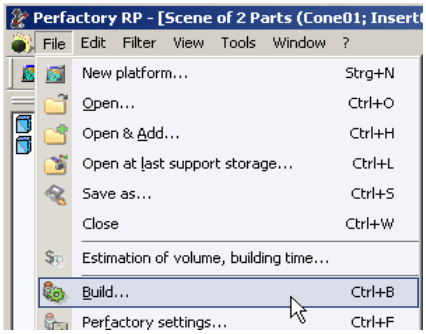
The last option is "Levelling". This option levels the parts to the building plate. Every levelled part is placed exactly to the building plate. It is recommended to enable this option!

Make your settings and press the "OK" - button. Now the placement process will be performed.

NOTE: The „Align unplaceable parts“ option is useful for manually optimizing the placement results because it allows easily to view, select and move the unplaced parts.

2.5.5 How to create a Build job:

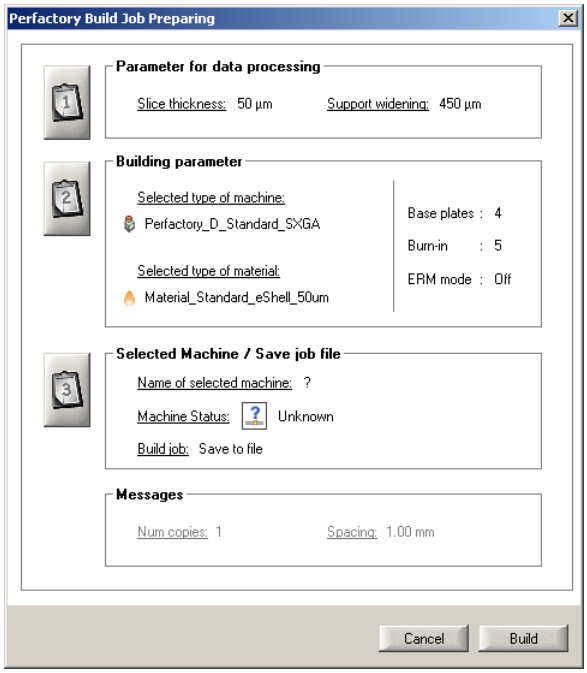
Requirements: At least one open .stl data file placed and levelled on the building platform.


Perfactory RP - [Scene of 2 Parts (Cone01; Insert
File Edit Filter View Tools Window ?
New platform... Strg+N
Open... Ctrl+O
Open & Add... Ctrl+H
Open at last support storage... Ctrl+L
Save as... Ctrl+S
Close Ctrl+W
Estimation of volume, building time...
Build... Ctrl+B
Perfactory settings... Ctrl+F

First press the Icon for "Build..." ( ) or select the menu entry "Build...".

If there are more than one build filter installed there will appear a selection dialog. Please select the buildfilter that fits to your machine. If you have a machine with ERM module, please choose „Buildjob STL - ERM“. If your machine doesn't have an ERM - module, please choose „Buildjob STL - STD“.

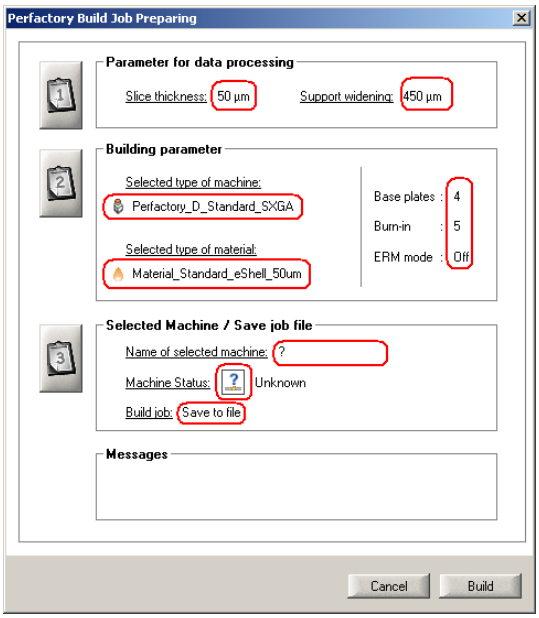
NOTE: Use the ERM Buildfilter only to generate jobfiles for Perfactory machines with ERM module!

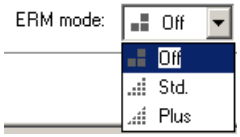


A dialog box appears. This dialog box contains four sections. Every section represents an essential step to the build job.

If a button is flashing (red) then there are some settings needed before building is possible! To do the settings click on the left aligned buttons.

Please check your settings in the overview before you start the job file generation by pressing the „Build“ button.





Parameter for data processing:

In this step you can set the layer thickness for the slicing process and the widening thickness for the supports. Further it is possible to enable/disable some automatic repair options (It is NOT recommended to disable the repair options).

Building parameter:

In this step you can select your type of machine and material. The default values are the values you have selected while you opened your file/project. You can also set some user values for parameters like exposure time or number of burn-in layers.

If you have selected the „Buildfilter STL - ERM“, then this dialog contains a selection box that offers three types of ERM modes: The „ERM Off“ - mode for genrating standard jobs, the „ERM Std.“ - mode for generating jobs with ERM enabled and the „ERM Plus“ - mode for generating jobs with ERM enabled and additional dimensional accuracy.

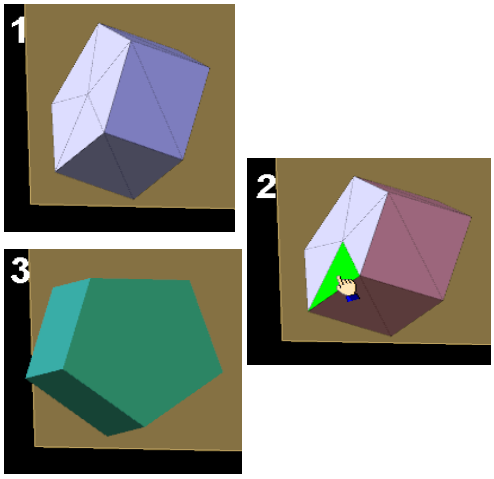
Select machine/Save job file:

In this final step you select your machine in the network (You can use the IP, the name or simply searching for it[2]) and determine whether you want to save your job to a file too. It is also possible only to save the job to a file - Check the "Save only to file" - checkbox. If you want to build your job on the selected machine, please check the status of the machine. If the status is "unknown" (?) check the machine status: Simply press the button "Check machine status"

NOTE:	Please check your settings in the overview before you start the job file generation by pressing the „Build“ button.

NOTE:	For a more detailed explanation see the tutorial "From a .stl file to a build job.

2. Searching the whole network can last some minutes so please be patient



2.5.6 How to reorientate a part

Requirements: At least one open .stl data file.

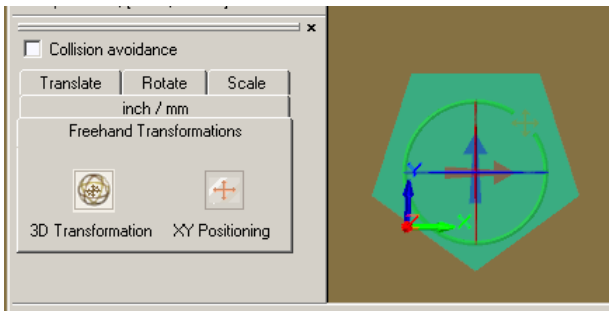
First press the Icon from the Interactor - toolbar for "Re-Alignment" ( ). The triangles of the model will be rendered on the surface.

Select that triangle that you want align to the building plate with a left mouse click.

To perform this operation, simply go back to the standard mode by pressing the arrow-icon ( )on the Interactor - toolbar.

2.5.7 How to perform geometry transformations like moving, rotating or scaling

Requirements: At least one open data file.

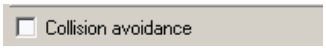


First press the Icon from the Interactor - toolbar for "Geometry transformation" ( ) or press the middle mouse button.

There are different possibilities to perform geometry transformations. All of this possibilities are controlled by a tabbed window at the bottom left corner.

NOTE: After doing the transformation click on the arrow-icon ( ) in the Interactor-toolbar or press the middle mouse button to go back to the standard mode. If you don't do this, the transformations won't be finalised!

NOTE: The geometry transformation mode can easily accessed and leaved by using the middle mouse button!



The option "collision avoidance" prevents you from positioning the part outside the building platform.

NOTE: If "collision avoidance" is enabled, parts which are not placed inside the building platform can't be moved!

The tab "Freehand Transformation" offers you two ways to transform the part with your mouse.

3D transformation

The first option is the "3D transformation". It draws transformation markers within your selected parts.

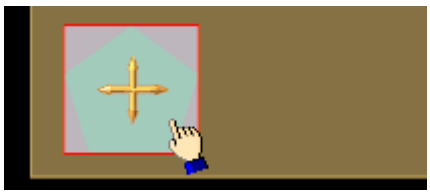
The big arrows are for translation(moving). Point and click on such an arrow. Hold the mouse-button pressed and move the mouse in/against the direction of the arrow. The part should move in corresponding direction.

The rotation works the same way: But instead of the arrows use the green circles.

Finally you can scale the part. Instead off the arrows or the circles, select the crossed arrows.

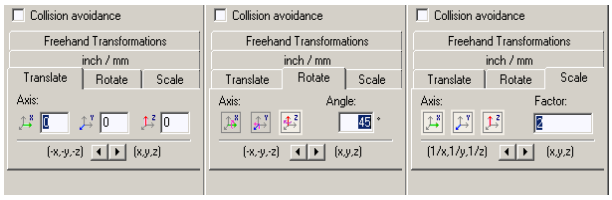
XY Positioning

The second way is the "XY Positioning". It draws a flat plane over your selected parts. This plane is a transformation marker for easy x/y - Transformation along the building plate. This way is useful for fast and easy positioning. If „collision avoidance“ is enabled and the part is not placed inside the building platform, the plane will be colored red.



Point and click on this plane and hold the mouse button pressed. Now you can freely move the part on the building plate.

Translation/Rotation/Scale



The tabs "Translation/Rotation/Scale" allows you to transform the parts by entering parameter values:

Translation:

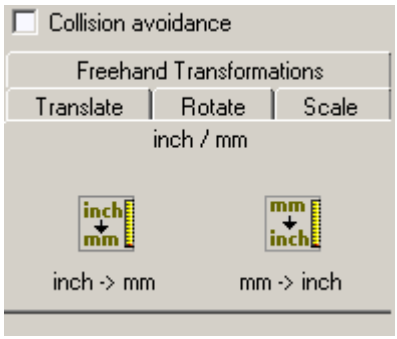
Enter the values you want to translate e.g. 0 mm in x-direction, 5 mm in y direction and 0 mm in z-direction. Pressing the left Button will translate the part [-] 5 mm in y direction. Pressing the right button will translate the part [+] 5mm in y - direction.

Rotation:

Enter the rotation angle and select a rotation axis. By pressing the left or the right button the part will rotate around the selected axis by the given angle in clockwise / counter-clockwise direction.

Scale:

Enter the scaling factor and select your scaling directions. By pressing the left/right button, the part will be scaled up/down (compressed/stretched).



inch/mm, mm/inch conversion:

This tool allows you to convert the units from a part. E.g. if a part build in inches was loaded in mm it would be very small (1/25.4 of the original size). To recalculate the original size press the "inch -> mm" - Button and every unit will be multiplied with 25,4.

Explanation: The .stl Data format works only with numbers without units (e.g. 1 instead of 1mm) so the parts can be in inches or in mm. The software works internally with mm. If you load a part with a length of 1 inch it will handled as part with 1 mm. To get the correct measurements simply convert your units from "inch to mm" - every unit will be multiplied wit the conversion factor 25.4 - and the converted part has the length 25.4 mm and will be handled as part with 25.4 mm length which is the same as 1 inch.

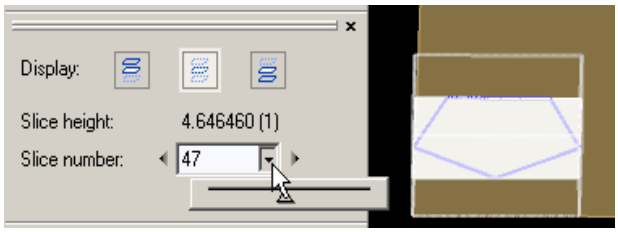
After the transformation don't forget to click on the arrow-icon ( ) in the Interactor- toolbar to go back to the standard mode. If you don't do this, the transformations won't be finalised!

2.5.8 How to convert a model from inch to mm / mm to inch

Have a look at 2.5.7, “How to perform geometry transformations like moving, rotating or scaling”

2.5.9 How to perform layer selections on layered data

Requirements: At least one sopen and elected layered (.slc, .cli) data file.



First press the Icon for "Layer Selection" ( ). On the bottom left corner appears a toolbar window and the rendering view is only ´showing one layer.

Now you can view every single layer only by entering the number. The easiest way is a click at the combobox - button (see picture) and move the slider. With this slider you can navigate through all layers.

You can use three display options:

Enabling this button will show all layers from the current to the top.

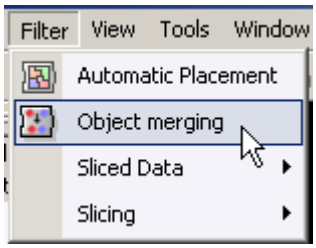
Enabling this button will show an transparent plane indicating the plane of the current layer.

Enabling this button will show all layers from the current to the bottom.

After using this Tool go back to the standard mode by pressing the arrow-icon ( ) on the Interactor - toolbar.

2.5.10 How to merge some files to one

Requirements: At least two open data file.

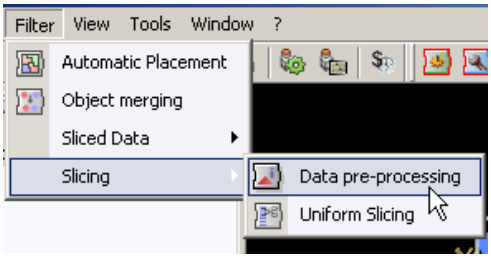


Select the parts you want to merge and click on the button at the toolbar ( ) or click on the menu "Filter" and choose the option "Object merging" to start the operation. All selected parts will be merged to one.

This function is useful if you want to process some files over the complete process in the same manner

2.5.11 How to pre-process data for slicing

Requirements: At least one open .stl data file.



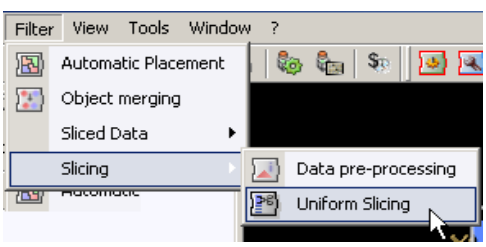
First click on the button at the toolbar ( ) or click on the menu "Filter", select the menu entry "Slicing" and choose the option "Data pre-processing" to start the operation.

You have to do this step before you are able to start the slicing process, because Data pre-processing estimates additional geometric informations to speed up the slicing operation.

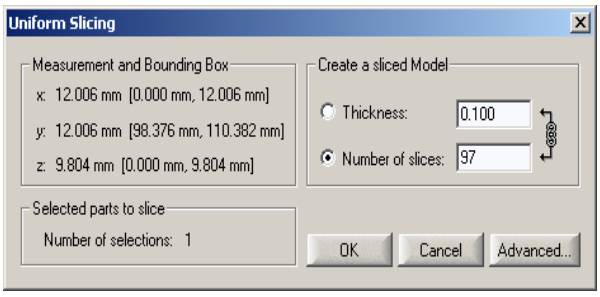
If you want to avoid this step you can do that estimation automatically during loading the STL-file. Click at the "Advanced" button at the dialog „Load STL file“ and activate the check box "Estimate Geometry Informations".

2.5.12 How to perform "Uniform slicing"

Requirements: At least one open .stl data file with estimated geometry information. If the geometry information is unknown use "Data Pre-processing (see 2.5.11, “How to pre-process data for slicing”) to estimate them.

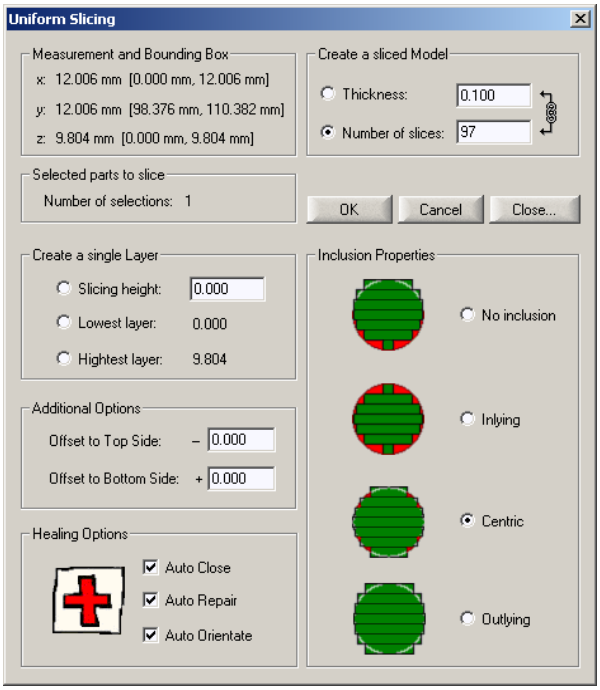


To slice all selected parts click on the button ( ) at the toolbar or click on the menu "Filter", select the menu entry "Slicing" and choose the option "Uniform Slicing".



A dialog box will appear. At „Create a sliced Model“ enter the number of layers or the layer thickness you want to use for the slicing operation.

NOTE: Please keep in mind that the slice thickness has to fit to the type of used machine and material.



If you click at the advanced button you can select between different slice and repair options:

Inclusion Options:

To determine the properties of the sliced model choose one of the inclusion options.

- If you want to slice without any affect to the result choose the option No Inclusion.
- If you want that the sliced model lies completely inside of the original model choose option Inlying. Take this option if you want to apply a surface varnish or paint after the building process.
- If you have no post processing operations after the building process you get the best accuracy of the generated model if you choose the option Centric.
- If you want that the sliced model lies completely outside of the original model choose option Outlying. Take this option if you want to sand the surface after the building process.

Healing Options:

The slicing operation will create defective layer contours if the geometry of a 3D model is corrupted. Use the healing options to repair those errors during the slicing operation:

- To close holes use the option Auto Close. Holes caused by unconnected triangles at the geometry of the 3D model.
- To avoid self intersections of contour lines use the option Auto Repair. Self intersections are a result of overlapped surfaces of a single 3D model and causes errors during the conversion to bitmap masks.
- To verify and correct the type of a contour use the option Auto Orientate. There are two possibletypes: So-called inside contours and outside contours. Inside contours can be described as holes. Outside contours are filled with material inside. Wrong contour types also causes errors during the conversion to bitmap masks.

Create a single Layer:

Use this option to verify the contour lines of a layer at a specified height.

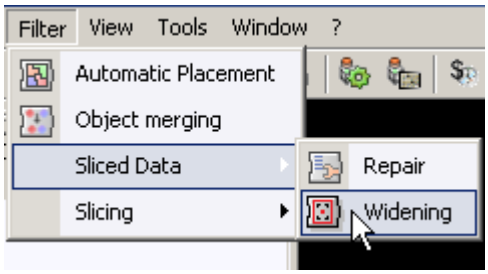
NOTE:	Use this option if you want to analyse a cross section of a specific high. If you use this option set the inclusion properties to „No inclusion“.

Additional Options:

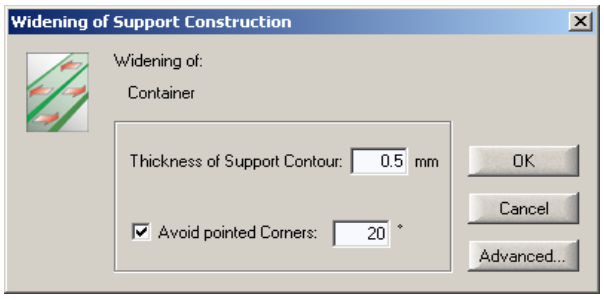
Sometimes there is the case that the base of a 3D-model seems to be flat (parallel to the building platform) but is not in fact flat or is slightly distorted. The first layer will then not have the expected shape which should be the shape of the base of the 3D-model. To avoid this enter a small offset which is added to the first resp. last slice height.

2.5.13 How to widen support data:

To widen one or more layered support structures first selected them all. To pick different width for different support structures select them separatly:



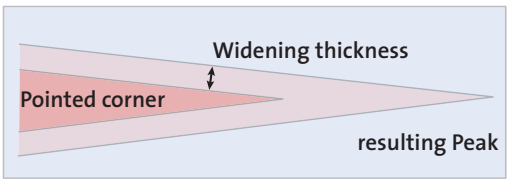
To widen a selection click on the button at the Toolbar ( ) or click on the menu "Filter", select the menu entry "Sliced Data" and choose the option "Widening".

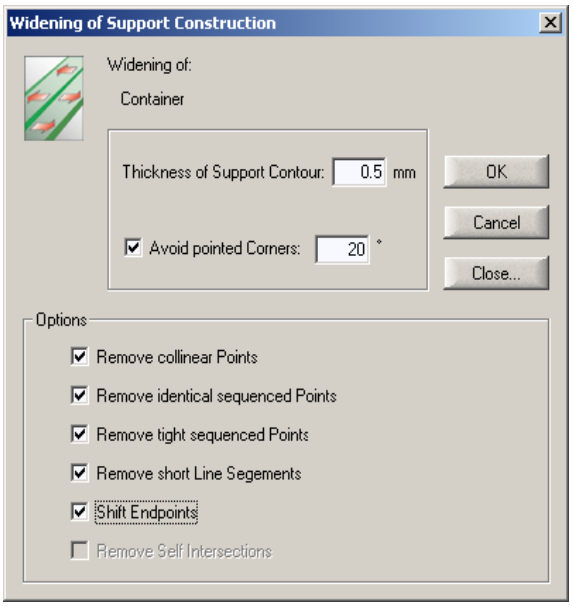


A dialog box appears where you can enter the thickness of the support contours.

Avoid pointed Corners:

Widening a pointed corner will move the peak a long way off the original peak. The smaller the angle between the edges of the pointed corner is the larger is the distance between the peaks. To avoid this enter an angle which lops the widened corner if the angle between the edges is smaller than the entered angle.





If you click at the advanced button you you get some more options. You can change several options which affect the widening result:

Remove collinear Points:

Select this option for a correct widening operation!

Remove identical sequenced Points:

Select this option for a correct widening operation!

Remove tight sequenced Points:

To reduce the number of points of high detailed contour lines select this option.

Remove short Line Segments:

To reduce the number of points of high detailed contour linesselect this option.

Shift Endpoints:

The widening operation will move the points only perpendicular to the contour line. In some cases this will produce small gaps between the widening support structures. Select this option to close this gaps.

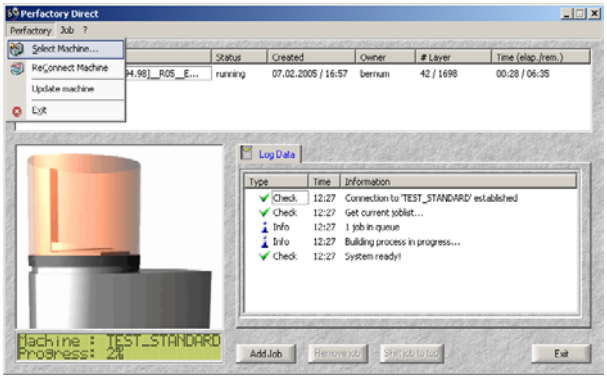
Remove Self-Intersections:

Self intersections are a result of overlapped surfaces of a single 3D model and causes errors during the conversion to bitmap masks This option is not necessary if the option Auto Orientation was selected during the slicing operation.

2.6 PERFACTORY® Direct

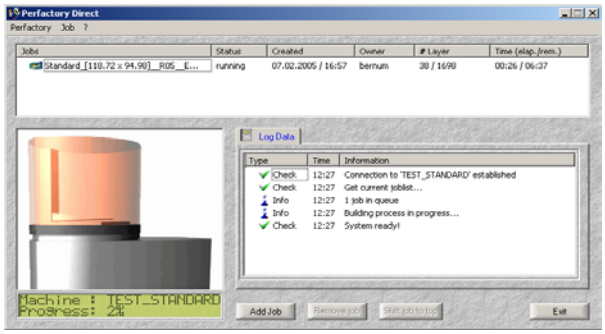
2.6.1 PERFACTORY® Direct (overview)

The module PERFACTORY® Direct is a printer like interface utility.

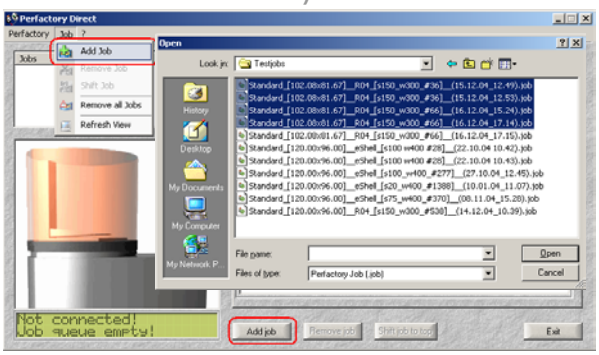


To display the progress and informations of building processes at a PERFACTORY® machine click on the menu PERFACTORY® and select the option Select Machine.

Enter the IP-address or the name of the PERFACTORY® machine at the appearing dialog box. To search the network for all machines which are online and to select one of these press the button Search Network.



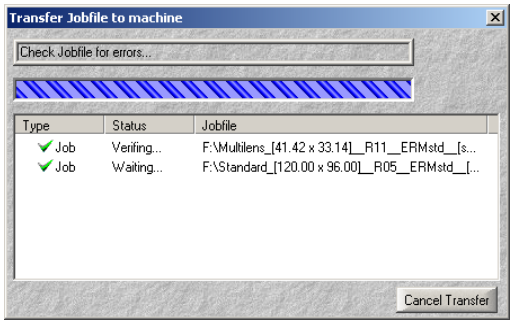
After a successful connection to the selected PERFACTORY® machine you can see the current machine status and the name, status, owner, number of layers and time period for all build jobs.



To transfer a build job to the current machine, click on the menu „Job“ and select the option „Add Job“ or click at the button „Add Job“.

A „File open...“ dialog will appear. Browse and select all jobfiles that should be transferred to the Perfactory machine and press „Open“

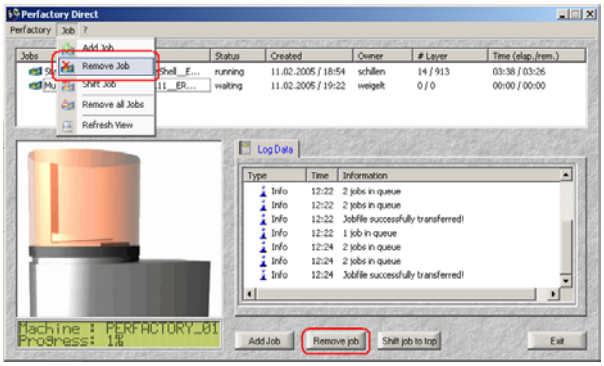
All selected jobfiles will be transferred to the machine now.



While transferring a status dialog appears. This dialog informs you about the progress of transferring and verifying the the jobfile(s). Verifying (especially for large jobfiles) may last some minutes.

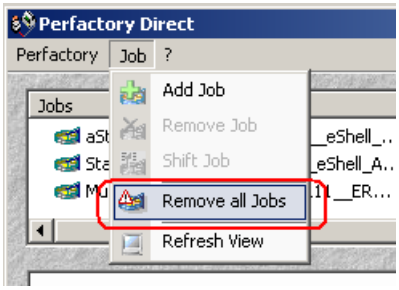
While verifying the progressbar is continuesly repeating!

After successful transferring the dialog disappears automatically.



To Remove a specific job, highlight the job name than click on the icon „Remove job“.

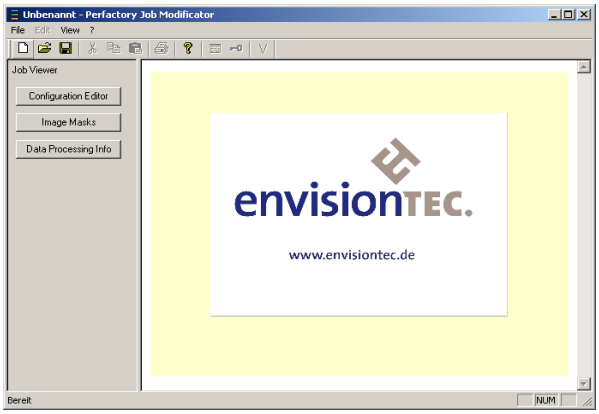
You can only remove jobs where you are the owner for!



You can also „Remove all jobs“ by selecting this option under „Job“ menu.

2.7 PERFACTORY® Job Modificator

NOTE: The „Remove all jobs“ function removes all jobs from the machine except that one that is building. This function doesn't care about the „owner“ status.



2.7.1 PERFACTORY® Job Modificator

The module „Perfactory Job Modificator“ is a tool that enables you to open Perfactory Jobfiles, to view and modify the building parameters and to view the contained bitmap images.

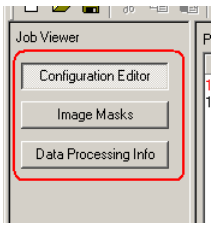
The Chapter 2.7.2 - 2.7.5 of this manual gives you an overview about this programm.

In Chapter 2.7.6 you will find a step by step - guide to modify a jobfile.

Chapter 2.7.7 contains a short explanation how to link the jobfile format to this application.

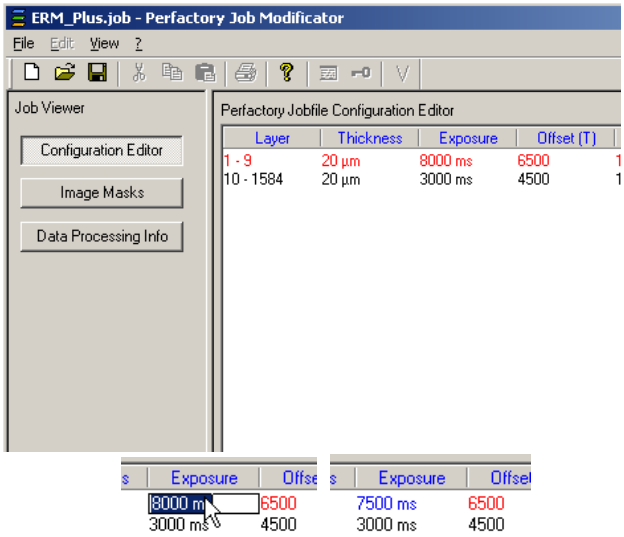
2.7.2 Introduction: „PERFACTORY® Job Modificator“

To start the Job Modificator use the Perfactory Start Center or make a double click with the left mousebutton on the jobfile that should be opened (please refer 2.7.7).



The buttons on the left view are for switching between the Views. There are three views available:

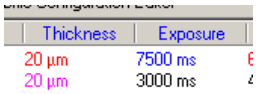
- „Configuration Editor“ - The configuration editor shows the building parameter in a table. This editor allows to view, check and modify this values.
- „Image Masks“ - The image mask viewer allows to view and check the bitmap images that are stored in a jobfile.
- „Data Processing Info“ - The Data Processing Info - View shows the Jobfile generation log info file.



2.7.3 The „Configuration Editor“:

The configuration editor shows the building parameter for the jobfile in a table. This table shows the values sorted by Layer. Layer with identical parameter values are merged together.

Except the Layer number and the thickness every value can be edited simply by selecting it with a left mouse click. The changed values will be checked and commited when you leave the field.



There are some color codes for easier identifying the type of values:

Red values are for BurnIn - Layer

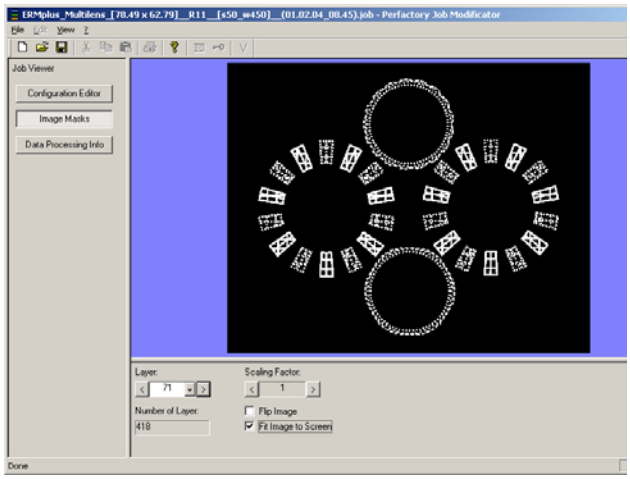
Black values are for Standard Layer

Blue values are for „modified“ and succesfull commited values

Pink values are for non successfull commited values.

NOTE: All changes made to this table will be only applied to the jobfile if you save it to disk!

2.7.4 The Image Mask Viewer:

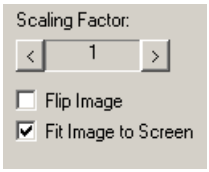


The mask viewer shows all bitmap mask files of the jobfile. It can be used to check whether the bitmaps are without errors like flashing, filled holes etc.

This viewer offers the following tools:

1. The „Layer selection“ where you can enter the number of the layer that should be shown directly or increase/decrease the current number with the „>“ and „<„ - buttons. The popup-menu contains a slider bar that allows a fast and easy checking simply by moving the bar.

You can scroll through the layers with the mouse wheel too!

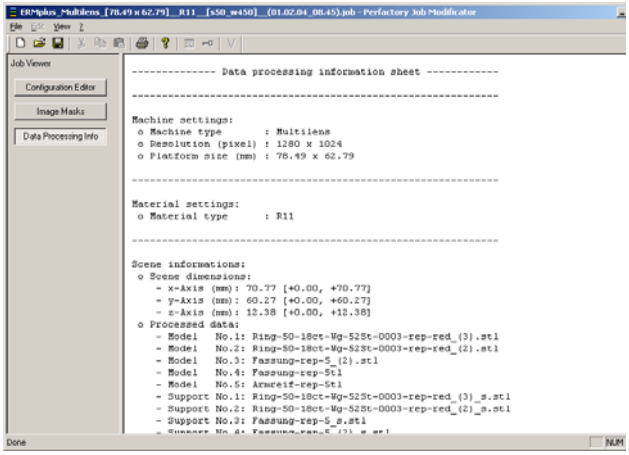


2. The „Scaling factor“ scales the image using the entered scaling factor. It can be used to zoom in to see details of the masks.

3. The „Flip Image“ option flips the image so that it is shown identical to the parts on the machine build platform instead of the mirror-inverted „view“ the projection system use.

4. The „Fit Image to screen“ option scales the Image to fit the current view. This option diable the scaling factor feature !

2.7.5 The „Data Processing Info“ Viewer



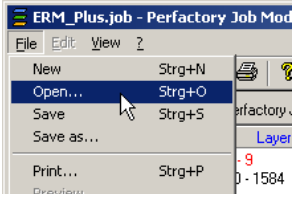
The „Data Processing Info“ is similiar to a log file. It contains some general information like creation date, used build filter, used parts, machine and scene settings etc. and a report log with errors/warnings that occured while jobfile generation.

These informations are not editable.

2.7.6 Short Guide: „How to modify a jobfile?“

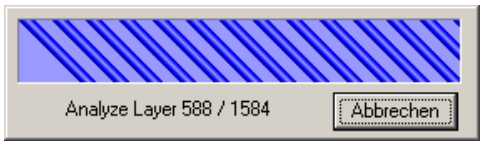
The first step is to open the jobfile you want to modify. There are two ways to do this.

The easiest one is to doubleclick on the jobfile - this will automatically load the jobfile. Before you can use this method you have to link the „job“ file extension to the Perfactory Job Modificator (For a short guide please refer 2.7.7).



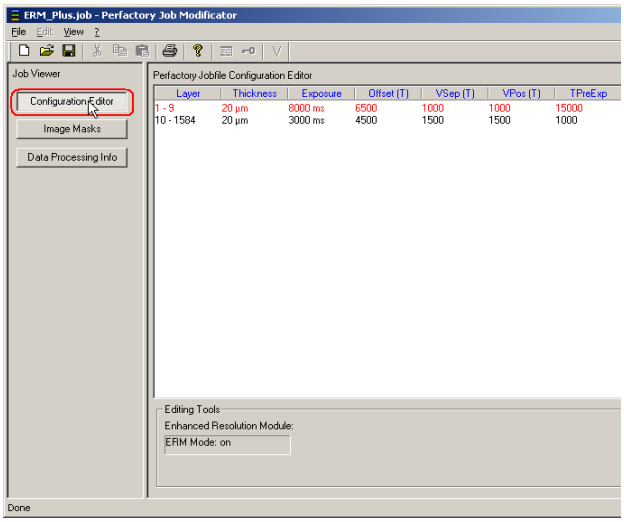
The standard way is to start the Perfactory Job Modificator (e.g. through the Perfactory Start Center), and then to open the file using the menu option „File->Open“ or the corresponding toolbar button ( ).

A „FileOpen“ - dialog appears. Now select the jobfile you want to modifiy and press Open.



While opening the file will be analyzed. The analyzing status is shown through a progress bar and some text.

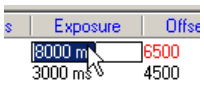
Cancelling this process will abort the jobfile configuration processing!


ERM_Plus.job - Perfactory Job Modificator
File Edit View ?
Job Viewer
Configuration Editor
Image Masks
Data Processing Info
Perfactory Jobfile Configuration Editor
Layer Thickness Exposure Offset (T) VSep (T) VPos (T) TPreExp
1 - 9 20 µm 8000 ms 6500 1000 1000 15000
10 - 1584 20 µm 3000 ms 4500 1500 1500 1000
Editing Tools
Enhanced Resolution Module:
ERM Mode: on
Done

After opening the file, the Configuration Editor View should be visible. If not, so select it by pressing the „Configuration Editor“ button (see left view).

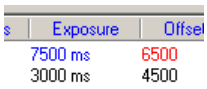
The table contains for every layer one entry. All entrys with identical values will be merged together so normally you will have two entries. One for the BurnInLayer with long exposure and waiting times that is drawn with a red color and one for the standard layer with shorter times.

To e.g. modify the value for the Exposure time of the burn in Layer make a left mouse click on the table Entry „Exposure“ in the Row of the „BurnIn Values“



Now the value can be modified be entering a valid number. To commit the new value, press „Return“ or make a click to another field. The value will be checked and if it is OK it will appear in blue else the old value reappears and it is marked in pink.

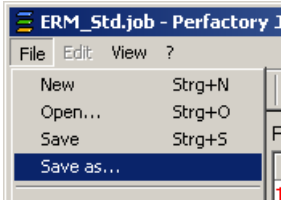
.



NOTE: Currently there are no range checks available. Please enter only appropriate values else the machine will not accept the jobfile or the job will not build correctly!

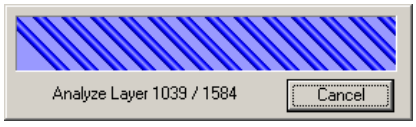
To apply the modifications to the jobfile the you have to save it:

Saving it by overwriting the opened file is easy - simply press the „Save“ - option in the „File“ menu or the corresponding toolbar - button ( )



To save it to a new file, select the „Save as...“ option in the „File“ menu.

A „Save as...“ dialog will appear. Now enter a filename or select the file that should be overwritten and press „Save“.

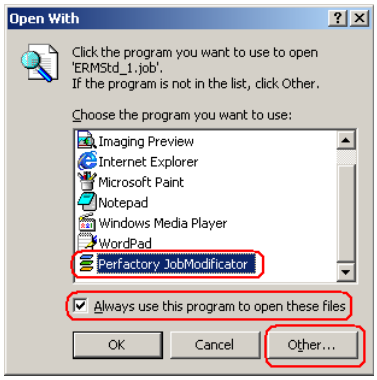


While saving a progress bar with status information is shown.

Cancelling this process will abort saving of the jobfile and its modifications!

After successful saving a messagebox like the left one will be shown. Now the jobfile is successfully modified and can be send to the machine using the Perfactory Direct software!

2.7.7 How to link the jobfile extension to the Job Modificator:



1. Doubleclick on a jobfile. The „Open with...“ dialog will apear asking for the application that should be used to open this file.

2. Now press the „Other“ - button to browse for the Job Modificator Application in the installation directory of the Perfactory Software Suite. The default path for the folder that contains the Perfactory Job Modificator is: „C:\Program Files\envisiontec\perfactory software suite\perfactory job modificator\ “

3. Select the „Perfactory Job Modificator.exe“ and Press „OK“. Back into the „Open with...“ dialog check the „Always use this program to open these file“ checkbox and press OK again.

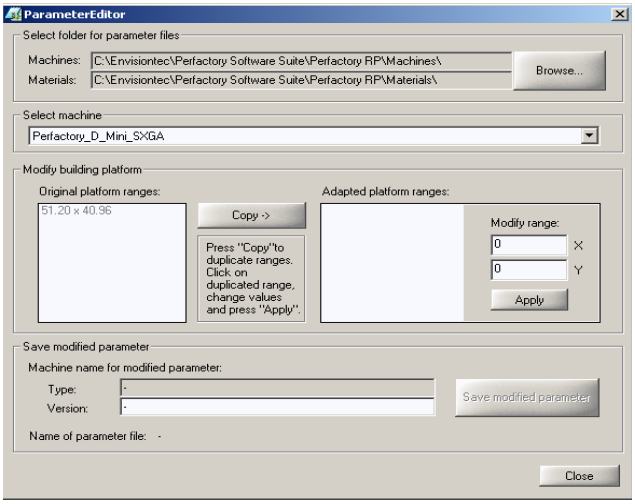
4. Now the jobfiles are linked to the Job Modificator and can be opened with a doubleclick using the left mousebutton.

2.8 Parameter Editor

2.8.1 General Instructions:

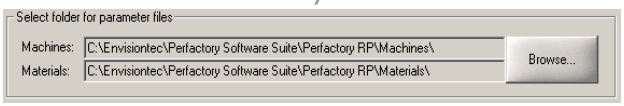
- Please make sure that the Envisiontec Perfactory Software Suite is installed and configured correctly.
- Please make a backup of your old machine- and material parameter files. To find this files, open the directory where you installed your Perfactory software (e.g. „c:\program files\Envisiontec\“) and choose the PerfactoryRP - folder. In this folder you will find the two folders „materials“ and „machines“. Make a copy of both folders.

2.8.2 How to modify a parameter file:



1. Execute the Perfactory ParameterEditor software.

   A dialog similiar to the left picture appears.

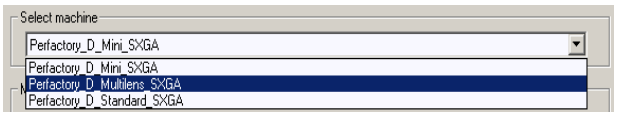


2. Select the path to your machine- and material parameter files.

   This software uses the PerfactoryRP path settings as default settings. If you have configured it correctly, the displayed path should be correct.

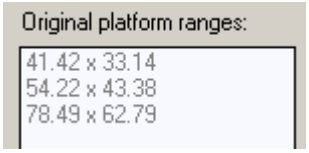
   If you want select another path you can do this by pressing the „Browse...“ - button. Two dialogboxes to select a folder will appear. Use the first one to choose the path to the machine parameter files and the second one to choose the material parameter files.

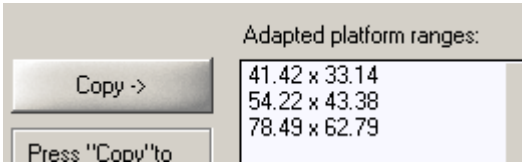
   Please keep in mind that changing this paths will affect the path settings of PerfactoryRP too!



3. Select the machine whose parameter files you want to modify.

   Choose your machine from the offered ones. After selecting a machine the corresponding platform ranges will be shown in the listbox below.

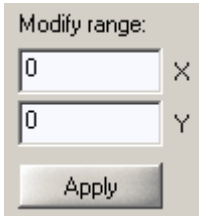




4. Press the „Copy ->“ - button.

   This button copies all valid ranges to the „Adapted platform ranges“ - listbox.

   If you choose another type of machine, you have to press the „Copy ->“ - button again!

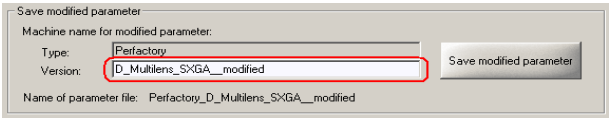


5. Select and modify the entries

   Select an entry of the listbox. The range values of this entry appear in the two edit fields for X and Y (see below „Edit single item“).

   Change this values by entering your values. To confirm them, simply press the „Apply“ - button. The values of the selected range are modified now.

   Do that operation for every platform range you wish to modify.



6. Edit the filename:

   This option allows you to modify the name for the „new“ set of machine and material parameter.

   The default value is the old name with an appended „_modified“ - text. Feel free to change this to a more informative name of your choice.

   Please beware of using used filenames (have a look at the offered machines in the „select machine“-field and compare with the „result name“). Your original data may be overwritten.

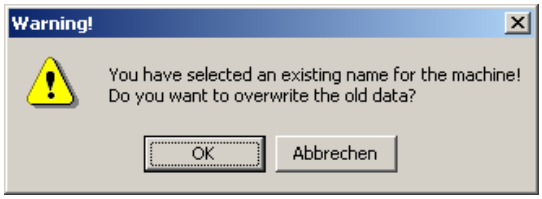
   For fine-adapting adapted parameters it is recommended to replace the existing one by using the same name to avoid a big number of user defined machines and performance problems.

   It is strongly not recommended to overwrite the original machine settings like Perfactory D_Standard_SXGA etc. else these default values will be overwritten!

7. Process the parameter and save the modificated files:

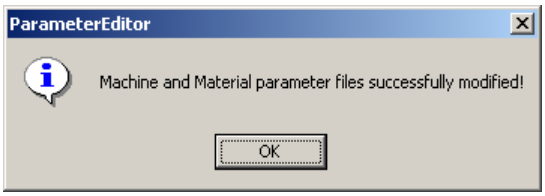
   Press the „Save result“ - button to process and save the data.

   Press the „Close“ - button to leave this software without any changes to the parameter files.



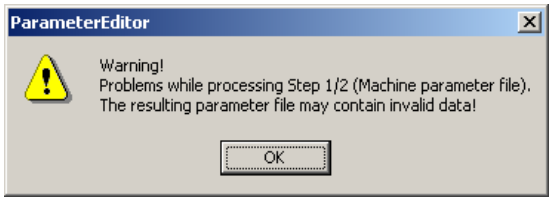
   If you use an used name for the modificated file, a message Box appears and asking for overwriting this settings. If you select „OK“ the original files may be overwritten. This option is not recommended because of the data loss. Please use another parameter name (see Step 6.).

After successful processing appears a dialog box and informs you about this result.



2.8.3 Error Messages

This warning appears while processing the parameter files (step 1/2 means machine parameter and step 2/2 means material parameter) if the software can't process some expected content. The resulting parameter files may be successful processed but invalid.



NOTE: If one of these error messages appear, please contact Envisiontec (email: support@envisiontec.de).